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ORIGINAL ARTICLES.

FETAL, CONGENITAL AND INFANTILE TYPHOID.*

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ALTHOUGH much has been written in the past regarding this subject and many cases reported from time to time, yet, on account of the inherent difficulty of the diagnosis from either a symptomological or pathological standpoint, but little reliance can be placed on the earlier data and no satisfactory conclusions drawn from them. Since the accurate differentiation of the typhoid bacillus and the discovery of the typhoid serum reaction, however, a certain amount of trustworthy material regarding fetal and infantile typhoid has accumulated. Conclusions based on these later data are of some real value.

Abortion in Typhoid.—Abortion occurs in from 50 per cent. to 70 per cent. of the cases of typhoid. Various causes have been advanced for this frequency of abortion. Among them are (1) the high temperature, (2) the accumulation of toxins in the maternal blood, (3) the death of the fetus. It is probable that there is no common cause and that the etiology varies in different cases, any one of the above causes being amply sufficient to produce abortion. Most writers agree, however, that the death of the fetus is the most common cause. This may result from the high temperature, the passage of toxins through the placenta, or intra-uterine typhoid, the last being probably the most common.

Fetal and Congenital Typhoid.—Under the head of fetal typhoid are included the cases which are born dead or die at birth, while under the head of congenital typhoid are included the cases which are born alive and suffering from typhoid. This division is an arbitrary one and comparatively unimportant. The important consideration is whether the infection is intra-uterine or extra-uterine in origin.

In considering the question of intra-uterine typhoid infection it is necessary, in the first place, to throw out all the cases described before the discovery of the typhoid bacillus and all the conclusions drawn from them. Analysis of these cases shows that the great majority of them were certainly not typhoid, and in none of them is the evidence convincing. Moreover, some of those which are supported by bacteriological examinations are open to criticism, as they were studied before the differences between the typhoid ba-

cillus and the colon bacillus were as well recognized as they are at present. A considerable number of cases, however, have been sufficiently studied to be worthy of analysis and to form the basis for certain conclusions. Fifteen of these have been proved by autopsy and cultures, and one by autopsy and an increasing serum reaction. Ten were born dead and six died in from five minutes to three weeks after birth.

*Giglio: Miscarriage in sixth week of typhoid of 3½ months' fetus. Numerous hemorrhages in placenta. Microscopically typhoid bacilli in intervillous spaces. Fetus macroscopically and microscopically normal. Cultures from spleen, liver, intestines and blood of fetus showed typhoid bacilli.

*Eberth: Abortion of four months' fetus at end of third week. No changes in placenta. Typhoid bacilli were found in the intervillous spaces. Fetus was born dead in unbroken membranes. No changes in fetal organs. Cultures of typhoid bacilli were obtained from the heart's blood, lungs and spleen.

Lynch: Miscarriage at end of second week of typhoid at four months. Microscopically the placenta showed numerous hemorrhages. Sections of the placenta showed no bacilli. Cultures from the fetal blood and "organs" showed typhoid bacilli. The maternal blood gave a positive Widal reaction in a dilution of 1 to 50. The fetal blood was negative in a dilution of 1 to 10.

*Neuhauss: Miscarriage of a four-months' dead-born fetus on fourth day of convalescence after a relapse. No note as to placenta. Autopsy immediately after birth. The spleen was not enlarged and the intestines showed neither ulcers nor swollen Peyer's patches. Cultures of typhoid bacilli were obtained from the spleen, kidneys and lungs. The liver was sterile.

Etienne: Abortion at fifth month on twenty-ninth day of disease. No placental lesion. Cultures from placental blood showed typhoid bacilli. All the fetal organs were perfectly healthy. Spleen not enlarged. Intestines normal. Cultures from splenic and hepatic pulp and heart's blood showed many typhoid bacilli.

Fordyce: Delivery at fifth month in sixth week of typhoid during a relapse. No note as to condition of placenta. Sections of placenta and umbilical cord showed no bacilli. Fetus died during delivery. Very careful autopsy. Everything normal except for a small amount of serous fluid in the peritoneal cavity. This fluid gave an almost immediate positive Widal reaction. Sections of the liver, spleen and kidney showed no bacilli. Cultures from the kidney and spleen showed typhoid bacilli answering all tests, including the serum reaction. Cultures from the intestinal contents and heart's blood were sterile. The heart's blood, however, gave a positive serum reaction.

*Reher: Abortion of six-months' dead-born fetus on nineteenth day. The placenta was not examined. The spleen and mesenteric glands were not enlarged. The intestines were normal. No bacilli were seen in smears and sections of the liver and spleen. Cultures were obtained from these organs.

Balp: A woman with typhoid—proved by autopsy four days after delivery—miscarried in the fifth week of a six-months' fetus. The blood of the placenta and of the fetal spleen showed typhoid bacilli and the *Staphylococcus pyogenes aureus*.

* Read before the New York Academy of Medicine, March 19, 1903.

Hildebrandt: Miscarriage at end of second week of seven-months' dead-born fetus. No note as to condition of placenta. A few typhoid bacilli were found in the placental spaces. The spleen was possibly a little enlarged. The mesenteric glands were not enlarged. There were a few prominent solitary follicles in the lower ileum, but they contained no bacilli. Typhoid bacilli were found in the smears from the spleen, liver, mesenteric glands and blood; in sections of the spleen and kidneys, and in cultures from the spleen, liver, mesenteric glands and blood.

Frascani: Miscarriage in fourth week of eight-months' macerated fetus. Numerous placental hemorrhages. Maternal splenic blood (obtained with syringe) showed typhoid bacilli in cultures. Blood from the fetal organs gave pure cultures of typhoid bacilli.

Freund and Levy: Abortion at six months in fourth week of typhoid. Delivery conducted under strict aseptic precautions. Placenta showed evidences of an old endometritis, but none of any recent, acute process. Cultures from placenta showed typhoid bacilli. Cultures from surface of placenta sterile. Child died in fifteen minutes. Bacteriological examination begun five minutes later. There was a slight hyperplasia of the spleen, which appeared a little softer than normal. The intestinal mucosa was normal. There was no ulceration of Peyer's patches. Cultures from the splenic pulp and the heart's blood showed the bacillus of Eberth. Cultures from the vernix caseosa were sterile.

Dürk: A woman with typhoid was delivered of a living child on the twenty-fourth day. The child died in nine hours. There was marked swelling of the liver and numerous hemorrhages beneath its capsule. The spleen was enlarged and congested and typhoid bacilli and staphylococci were found in sections. The other organs were normal. Cultures from the liver and spleen showed typhoid bacilli and the *Staphylococcus pyogenes albus*.

Ernst: Miscarriage at eight months on eleventh day. No note as to placenta. Fetus lived ninety-three hours. It showed no symptoms of typhoid. It was not nursed by its own mother. It had icterus and died suddenly. The intestinal tract was normal. Typhoid bacilli were found in sections of the spleen, muscles, heart-muscle and blood-vessels of the brain and femur. Cultures were obtained from the spleen and heart's blood.

Legry: Abortion at seven months on fourth day of a relapse. No note as to placenta. The child was born alive and died after four days in an incubator. The liver of the fetus showed the same lesions as did that of the mother. A culture of the typhoid bacillus was obtained from the fetal liver.

Janiszewski: Miscarriage at 8½ months on twentieth day. No note as to placenta. Infant died on fifth day. The spleen was normal. There were superficial hemorrhages in the kidneys. There was bronchopneumonia. The other organs, including the intestines, were normal. The spleen, kidneys, mesenteric glands and lungs showed many typhoid bacilli microscopically. They were also obtained in cultures from these organs and from a piece of intestine near the ileocecal valve.

Brown: Miscarriage at eleventh day of seven and a half months' fetus. The mother had a typical typhoid with a positive Widal reaction. The infant's temperature was 100° F. at birth. It rose to 103° F., where it remained for about two weeks, after which it fell gradually to normal. The spleen was palpable and the stools yellowish and loose. There was no tympanites or roseola. The infant died of inanition two days after the temperature reached normal. The age of the infant at death is not stated. It was presumably about three weeks. On the ninth day the blood gave a partial Widal reaction in thirty minutes and a complete one in forty-

five minutes; on the sixteenth day it gave a positive reaction in ten minutes. The spleen was large and soft. The ileum showed healed ulcers with the characteristic shaven-beard appearance. The mesenteric glands were enlarged. No microscopic examination and no cultures were made.

These cases prove, without question, that the typhoid bacillus can pass from the mother to the fetus through the placenta. This fact has also been demonstrated experimentally by Chantemesse and Widal, Frascani and Remlinger. While there is no doubt that bacteria can pass from the mother to the fetus through the placenta, there is some doubt as to whether they can pass through the normal placenta. This question is, however, unimportant for our purposes.

Ten of these cases were born dead or died at birth. One died in fifteen minutes, one in nine hours, two in four days, one in five days and one in about three weeks. None of them showed any special symptoms beyond fever, but simply did not thrive and died. In the absence of the symptoms of any other disease and with the bacteriological evidence of typhoid infection, it seems reasonable to attribute their death to this cause. It is possible, however, that prematurity may have played a part in their early death.

Several other cases have been reported as examples of intra-uterine infection, or congenital typhoid fever. In estimating the value of these cases, however, it must be remembered that not every infant with fever born of a typhoid mother is suffering from typhoid fever, and that a positive Widal reaction in the infant does not necessarily mean typhoid in the infant, but may be due to agglutinin transmitted through the placenta. Rouslacroix's cases show how careful we must be in making the diagnosis of typhoid in the infants of women with typhoid:

Rouslacroix: Miscarriage of twins at eight months, near the end of the second week of typhoid. The mother's blood gave a positive Widal reaction, in a dilution of 1 to 100, fifteen minutes before the birth of the children. The mother died later. Both infants had edema of the face and legs from the second day. They also developed marked icterus. They did not vomit and had normal stools. The temperature of both rose nearly to 104° F. on the fourth day. One died on the fifth day and the other on the sixth day. The autopsy showed nothing abnormal in one and a little bronchopneumonia in the other. Cultures from the blood and spleen of one showed colon bacilli and no typhoid bacilli. The blood of both infants at birth and four days after birth was negative in a dilution of 1 to 10 after two hours.

The cases reported as congenital typhoid fever are as follows:

Bell: Full term labor two days after temperature had reached normal in an attack of typhoid showing a positive Widal reaction. The infant was apparently healthy at birth but developed a temperature at once. The next day it reached 103.4° F. It remained high for seven days, when it suddenly dropped to 100° F. From this time on it gradually declined. There was marked jaundice and very many rose spots. The tongue was raw, shiny and red, and finally fissured. Stupor

was marked. The baby was nursed by its mother. Its blood gave a positive Widal reaction on the second day, while the leucocytes numbered 15,000. Three positive Widal's were obtained during the week. The reaction of the milk was not tested. Four months later the mother's blood gave no Widal reaction, while the infant's gave a positive reaction in a dilution of 1 to 20 in two hours.

*Westervelt: Miscarriage at the beginning of the third week of 7½ months' fetus weighing 3 pounds 14 ounces. The mother's blood gave a positive Widal reaction. Ten hours after birth the temperature was 103.5° F. During the next seventeen days it ranged between 102° F. and 99.2° F. During the next three weeks it ranged from 99° F. to 97.8° F. and the child gained in weight. At this time the child had a convulsion and the temperature rose to 106.4° F. After this it was normal. The spleen was much enlarged, the abdomen was distended and the child had diarrhea. There were no rose spots. The Widal reaction was not tried. The infant recovered.

*Chambrelet and St. Philippe: Miscarriage at eight months. The infant did not do well from the start. It was feeble, had a large liver with jaundice and developed bronchopneumonia. Presumably it died. It was not nursed and was taken from the mother immediately. The infant's blood and the serum from a blister gave a very marked positive Widal reaction. The day on which the reaction was obtained is not given.

*Johnston: An infant was found to have fever five days after birth. From this time until the end of its illness the infant had a continued fever. Presumably it died, although no statement is made to that effect. As the case was reported in a discussion of infantile typhoid it is presumable that the mother had typhoid, but no such statement is made. Tympanites and constipation. No roseola. Marked restlessness. An older child in the house developed enteric fever a short time later. No further data.

*Krim: Miscarriage at the end of the second week, a week before term. Widal reaction in mother not tested. Infant's temperature at birth was 102° F. and five hours later 103.5° F. It ranged at about these figures for seventeen days, when it fell to normal. The infant was bottle-fed and made a good recovery. No other data as to symptoms or Widal reaction.

*Oakey: A woman with typhoid was delivered of a child at about full term. It was feverish at birth and died in ten days.

While Krim's, Johnston's and Oakey's cases may have been typhoid they cannot be accepted as proved because the data is insufficient. Westervelt's and Chambrelet and St. Philippe's cases probably were typhoid, but here again the proof is hardly convincing. Bell's case was almost certainly typhoid. The most convincing point is the presence of the Widal reaction in the infant four months later while it was absent in the mother. It could hardly have been transmitted to the infant through the milk, because, when thus transmitted, it persists but a short time.

It is evident, therefore, that the fetus most often dies in utero as the result of the typhoid infection. If it is born alive it usually succumbs rapidly to an acute cachexia without special characteristics. If it lives longer it may develop some of the classic symptoms of extra-uterine typhoid and may possibly survive the disease.

In 12 of these cases the organs were carefully examined macroscopically and often microscopically as well. In four the spleen was somewhat enlarged; in two of these it was slightly soft and in one congested. In one there were a few prominent follicles in the lower ileum but they did not contain bacilli, and in Brown's case which lived about three weeks there were healed ulcers and enlarged mesenteric glands. In one the kidneys showed superficial hemorrhages. In one other case in which only the liver was examined it showed microscopic changes identical with those found in the mother's liver, and in one there was marked swelling of the liver and numerous hemorrhages beneath its capsule. These were the only pathological changes found in all the cases. It is evident, therefore, that the lesions of the intestine and mesenteric glands so characteristic of typhoid in extra-uterine life do not occur in intra-uterine typhoid unless the patient survives some time after birth. These organs are almost invariably normal. The liver and spleen are sometimes enlarged, however, and hemorrhages may take place into different organs.

These differences in the pathology of extra-uterine and intra-uterine typhoid are probably due in part to the difference in the method of infection, and in part to the fact that the intestine is not functioning in fetal life. In the one instance the bacilli enter through the mouth, localize themselves in the intestine, and thence comparatively slowly infect the organism through the blood; in the other they enter the circulation directly through the umbilical vein and cause a general infection from the start. One is a primary, the other a secondary septicemia. The experiments of Netter and Levy show that in intra-uterine pneumococcus infection pulmonary lesions do not develop when the lungs have not functionated. A pneumococcus septicemia results instead. If the lungs functionate after birth pneumonia may develop. The comparatively marked changes in the intestine in Brown's case, which lived three weeks, are of interest in this connection. Mamoinski, moreover, found that the spleen of a fetus whose blood contained an abundance of the spirochaetæ of relapsing fever did not show any characteristic changes.

The lesions of intra-uterine typhoid infection are, therefore, general rather than local. The cases of adult typhoid without intestinal lesions and of severe and even fatal cases of typhoid with very slight intestinal symptoms are of interest in this connection. The results of the bacteriological examinations in the reported cases are important as giving corroborative evidence of the general septicemic nature of the infection in the fetus. Cultures were made in every case but one, but unfortunately not from all the organs in every case. Typhoid bacilli were found in the spleen in every instance in which cultures were made, and in the heart's blood and liver in all but one. They were found in the liver in nine cases, in the kidney in five, in the lungs in five, in the mesenteric glands in two and in the intestines

*Cases in which the proof, bacteriological or otherwise, is not positive.

in two. Blumer's case, which developed in the three-days' old infant of a woman who had had typhoid when $4\frac{1}{2}$ months pregnant, is interesting in this connection as showing the septicemic nature of the infection.

Blumer: Typhoid in fifth month of pregnancy. Full-term labor. Infant normal at birth. Three days after birth infant developed convulsions, which continued. On the fifth day bleeding began from an erosion of the cervix and continued. Death on ninth day. The autopsy showed hemorrhages into the kidney, bladder, vagina, uterus, esophagus, intestines and mesenteric glands. There was swelling of the spleen and cloudy swelling of the liver and kidneys. There was a follicular colitis and ileitis. The histological findings in the organs were those described by Mallory in the typhoid of adults, but less in degree. Cultures from the heart's blood, liver and kidney were negative. Those from the lung, umbilical cord, bile, spleen and contents of colon contained typhoid bacilli. Blumer thinks that the typhoid bacilli must have remained latent in the fetal tissues for four and one-half months and then suddenly became disseminated, causing the septicemic type of the disease. He thinks that the disease developed too soon for infection from outside. The infant was breast-fed and the mother's urine contained no typhoid bacilli.

The septicemic nature of the infection accounts for the extreme mortality in fetal and congenital typhoid. This mortality may, however, be more apparent than real as it is possible that a certain number of the infants which are born alive and well after typhoid fever in the mother may have had the disease in utero. A positive Widal reaction has been found in the blood of several infants born under such conditions. Unfortunately, however, this cannot be accepted as proof of intra-uterine typhoid, as the agglutinating power may have been transmitted from the mother through the placenta, the fetus not having had the disease. The case of Etienne's, in which the serum reaction was stronger in the fetal than in the maternal blood, does seem to suggest, nevertheless, that the fetus may survive an intra-uterine infection.

Etienne: A woman, five months pregnant, died on the fifteenth day. She did not miscarry. The fetus died as the result of her death. All the fetal organs were normal and cultures from its heart's blood, liver and spleen were sterile. The fetal heart-blood gave a positive Widal reaction in a dilution of 1 to 200, while that of the mother reacted only in a dilution of 1 to 150. He concludes, and it seems justly, that as the agglutinating power of the fetal blood was greater than that of its mother it did not pass from the mother to the fetus through the placenta, but was produced by the fetus itself. This may have been as the result of a previous intra-uterine infection or in response to toxic absorption through the placenta. The absence of typhoid bacilli in the organs is consistent with either explanation. The latter seems the more probable, however.

This case seems to be the only one which in any way goes to show that recovery from fetal typhoid ever occurs. There are many cases on record, however, which prove that infection of the fetus is not a necessary result of typhoid in the mother. Among these are those of Frascani, Charrier and Apert, Osler, Etienne, Fraenkel

and Simmonds, Darling, Wilson, Ker, Griffith, Morse, Plauchu and Gallavardin, Jehle, Mahrt and Rouslacroix.

The following conclusions regarding fetal and congenital typhoid seem justified:

1. The typhoid bacillus can transverse the abnormal, and possibly the normal, placenta from mother to fetus. Other organisms may also pass in the same way.
2. Infection of the fetus results. Because of the direct entrance of the bacilli into the circulation, intra-uterine typhoid is from the first a general septicemia. For this reason, and probably also because the intestines are not functioning, the classical lesions of extra-uterine typhoid are wanting.
3. The fetus usually dies in utero or at birth as the result of typhoid infection.
4. It may be born alive, but feeble and suffering from the infection. If so, death usually occurs in a few days without definite symptoms.
5. If it lives longer it may develop some of the classical symptoms of extra-uterine typhoid infection and at death may show some of its pathological lesions. Death is the usual result, but certain imperfectly reported cases suggest, if they do not prove, that recovery may take place.
6. It is possible that the fetus may pass through the infection in utero and be born alive and well. There is, however, no proof that this happens.

7. Infection does not always occur. The pregnant woman does not necessarily transmit the disease to her child.

Infantile Typhoid.—A number of years ago there was much discussion as to whether or not typhoid fever ever occurred in infancy. This discussion was soon settled in the affirmative. Since then, however, there has been much difference of opinion as to the frequency of typhoid in infancy, that is, in the first two years of life.

There is no very evident reason why the infant should be less susceptible to typhoid infection than the adult; in fact, judging from his greater susceptibility to bacterial infection in general, he should be more so. The exposure during the first year, when the infant is usually fed on breast milk or some cooked food, is undoubtedly less than in adult life. In the second year, however, when it is fed largely on raw milk it should be greater, exposure through water being the same in both cases. Nevertheless, statistics in epidemics and in large series of cases apparently show that typhoid is very uncommon at this age. On the other hand, several large series of cases, some of which reach into the hundreds, have been collected from literature. These series prove, what no one at present denies, that typhoid fever occurs in infancy. They also prove that the literature of the last fifty years contains the reports of a considerable number of cases of typhoid in infancy. Granting that all the cases reported as typhoid really were typhoid, these few hundred cases are insignificant in comparison to the thousands of cases which have been reported in adults

during the same time. Thus, instead of proving that typhoid occurs frequently in infancy, they merely serve to emphasize its apparent infrequency. It cannot be granted, however, that all the cases in these series really were typhoid. In many the diagnosis is most certainly incorrect, and in more doubtful. When these incorrect and doubtful cases are eliminated, as they should be, the apparent infrequency of typhoid in infancy becomes even more evident. A striking thing about the cases which certainly were typhoid is the large proportion of them which occurred in connection with other cases in the same house or during severe epidemics. This suggests that infants contract the disease only when the exposure is considerable.

There can be but two interpretations of these figures: either typhoid fever is relatively uncommon in the first two years of life, or it is not recognized when it occurs. If it is not recognized when it occurs it must be because the disease at this age does not resemble the type seen in older children and adults, and hence is mistaken for some other condition.

Three methods are available for determining the type of typhoid in infancy: (a) Analysis of the previously reported cases in which the diagnosis is proved by a positive Widal reaction or by the cultivation of typhoid bacilli from the organs; (b) the use of the Widal test in large numbers of cases not clinically typhoid; (c) routine bacteriological examinations in large series of autopsies.

I find reports of 32 cases of typhoid fever in infants under two years of age, in which the diagnosis is proved by a positive Widal reaction (23), bacteriological examinations (5), or both (4).

Cassoute: Two months old. No fever. "Of all the usual signs of typhoid the only one present was persistent diarrhea." Death. Positive serum reaction in half an hour. Autopsy showed 14 infiltrated Peyer's patches, several of which had begun to ulcerate.

Griffith: Three months old. Diarrhea. No note as to roseola. Spleen enlarged. Duration fourteen days. Death. Positive Widal reaction from heart's blood. Autopsy showed throughout the ileum, and especially in its lower portion, Peyer's patches thickened, reddened and somewhat depressed. Microscopical examination showed infiltration and ulceration. The spleen was unusually large, soft and dark and the mesenteric glands enlarged.

Legry: Four months old. Bloody stools. Death. Autopsy showed enlargement of the follicles of the small intestine. Some isolated follicles and some of the Peyer's patches showed in their centers a depression corresponding to an ulceration to which was sometimes adherent a clot. Spleen enlarged. Typhoid bacilli cultivated from intestine and feces.

Roemheld: Seven months old. House epidemic. Abdomen slightly distended. Slight diarrhea. No roseola. No demonstrable enlargement of spleen. Duration, eighteen days. Death. Autopsy showed intestines normal except for slight injection of lowest Peyer's patches; spleen enlarged; mesenteric glands slightly enlarged; typhoid bacilli found in spleen.

Abt: Eight months old. Sudden onset with fever and vomiting. Fever high. Distention. Roseola. Spleen enlarged. Death with multiple gangrene. Posi-

tive Widal reaction. Bacilli "probably typhoid" cultivated from spleen.

Love: Eight months old. Dry tongue. No distention. No diarrhea. Roseola. No note as to spleen. Duration, twenty-one days. Recovery. Widal reaction positive.

Netter: Eight months old. Duration, nine days. Death. Widal reaction not mentioned. Autopsy showed lesions as well marked as in the adult. Cultures of typhoid bacilli obtained from spleen and mesenteric glands.

Netter: Eight months old. Duration, sixteen days. Death. Widal reaction not mentioned. Autopsy showed lesions as well marked as in the adult. Cultures of typhoid bacilli obtained from spleen and mesenteric glands.

Churchill: Eight months old. No note as to distention. Constipation. No roseola. Spleen not enlarged. Recovery. Positive Widal reaction.

Northrup: Nine months old. Stupor. Distention. Diarrhea. Roseola. Spleen enlarged. Duration, twenty-four days. Recovery. Widal reaction positive.

Méry: Nine months old. Breast and other food. No note as to whether nurse had previously had typhoid. No note as to distention, diarrhea or spleen. Roseola. Duration over two weeks. Recovery. Widal reaction positive.

Nobécourt and Berthrand: Eleven months old. Throat slightly red. Tongue coated in center, red at edges. Stupid. Strabismus. Rigidity of neck. Coarse râles both lungs. Meningeal symptoms marked at first and later diminished. Distention. Diarrhea. Roseola. Spleen not noted. Duration, over eleven days. Death. Positive Widal reaction.

Nobécourt: Eleven months old. No note as to distention or size of spleen. Rose spots and diarrhea. Duration and result not stated. Widal positive in dilution of 1 to 30.

Mitchell: Thirteen months old. Onset with fever. Bronchial and intestinal catarrh. Tongue coated. Distention. No note as to diarrhea or roseola. Spleen enlarged to percussion, but not palpable. Duration, eighteen days. Recovery. Positive Widal reaction.

Morse: Thirteen months old. Fed on milk. Mother had typhoid. Condition not typhoidal. No distention. Slight diarrhea. Roseola. Spleen easily palpable, two fingers' breadth below costal border. Duration, three weeks. Recovery. Positive serum reaction on three occasions.

Blackader: Thirteen months old. Slow onset. Seven days after onset picture that of incipient meningitis. Slight distention. Diarrhea. No roseola. Spleen palpable. Duration, twelve days. Death. Autopsy showed typhoid lesions and typhoid bacilli in the intestines.

Lazarus-Barlow: Thirteen months old. House epidemic. Bronchitis. Distention. Diarrhea. Roseola. Spleen not palpable. Duration, twenty-five days. Death. Positive Widal reaction. Autopsy showed normal intestines and a firm and somewhat enlarged spleen. Typhoid bacilli were isolated from the spleen.

Nobécourt and Berthrand: Fifteen months old. Tongue coated. Distention. Diarrhea. Roseola. No note as to spleen. Duration more than twenty days. Recovery. Positive Widal reaction.

Griffith: Fifteen months old. House epidemic. Distention not noted. Diarrhea. Roseola. Spleen not enlarged. Duration, three weeks. Recovery. Positive Widal reaction.

Samuels: Eighteen months old. Carphologia. Substultus. 35,000 leucocytes. Distention not noted. Constipation. No roseola. Spleen enlarged. Duration, twenty days. Recovery. Positive Widal reaction.

Long Island College Hospital: Eighteen months old. Mother and sister had typhoid. Condition slightly typhoidal. No note as to distention or diarrhea. Roseola. Spleen enlarged. Duration, twenty days. Recovery. Positive Widal reaction.

Haushalter: Eighteen months old. Sudden onset with vomiting, diarrhea and stupor. Rigidity of neck; nystagmus; contractures; carphologia. Distention. No diarrhea. Roseola. Spleen not noted. Duration, fourteen days. Death. Positive Widal reaction. Autopsy showed the characteristic lesions of typhoid about the cecum but less intense than in the adult. Typhoid bacilli cultivated from the spleen.

Nobécourt: Eighteen months old. Distention, rose spots, diarrhea and splenic enlargement. Duration, thirty-eight days. Death. Widal reaction positive in dilution of 1 to 30. No autopsy.

Strasser: Nineteen months old. Acute onset with pulmonary symptoms and solidification of lung. No note as to distention. Bowels normal. Roseola. No note as to spleen. Duration, more than eighteen days. Recovery. Positive Widal reaction.

Griffith: Nineteen months old. Diarrhea. Roseola. Spleen much enlarged. Duration, four weeks. Recovery. Positive serum reaction.

Griffith: Nineteen months. Diarrhea. Roseola. Spleen much enlarged. Duration, not determined because of complicating diphtheria. Recovery. Positive Widal reaction.

Churchill: Twenty months old. No note as to distention. Diarrhea. No roseola. No enlargement of spleen. Duration not given. Death. Positive Widal reaction.

Bryant: Twenty-one months old. House epidemic. Distention. Diarrhea. Vomiting. No note as to roseola. Spleen enlarged. Duration, twenty-two days. Death. Positive Widal reaction in 1 to 20 dilution in two minutes. Autopsy showed intestines normal; spleen slightly enlarged; mesenteric glands large and soft. Cultures of typhoid bacilli which answered all tests were obtained from the mesenteric glands.

Churchill: Twenty-one months old. No note as to distention. Diarrhea. No note as to roseola or spleen. Recovery. Positive Widal reaction. Duration not given.

Nachod: Twenty-two months old. House epidemic. Diarrhea. Spleen enlarged. No note as to distention or roseola. Signs of bronchopneumonia. Duration not determined. Death from bronchopneumonia. Pronounced positive Widal reaction. Autopsy showed intestines normal. Peyer's patches not swollen and showed no loss of substance. The spleen was much enlarged. Mesenteric glands somewhat enlarged and rather hard. Cultures from the intestinal contents showed no typhoid bacilli. Pneumonia in right lung. He considers that the patient was recovered from the typhoid and died as the result of the sequelae. On this ground explains the absence of the bacilli in the intestine and the presence of the Widal reaction.

Abt: Twenty-three months old. Distention, condition of bowels and roseola not noted. Spleen enlarged. Duration, sixteen days. Recovery. Positive Widal reaction.

Sixteen of these cases died and 15 recovered, giving a mortality of over 50 per cent. This figure is undoubtedly higher than the average mortality of infantile typhoid, because of the basis on which the cases were chosen. It does show, however, that typhoid is not a very mild disease in infancy. The spleen was enlarged clinically in 15, or 68 per cent. of the 22 cases in

which it was mentioned. Rose spots were present in 16, or 69 per cent. of the 23 cases in which they were sought. Distention of the abdomen was noted in 11, or 73 per cent., of 15 cases. The stools were normal in one of the 27 cases in which their character is mentioned. There was diarrhea in 19, or 78 per cent., and constipation in 5, or 19 per cent. The average duration in 10 cases which recovered was twenty-one days, and in 10 which died, eighteen days. The fever was, as a rule, high. The onset was sudden in three cases; in one with vomiting, and in the others with pulmonary symptoms. Nervous symptoms were marked in four, in two of which meningitis was suspected.

Analysis of these cases seems to show that with some minor exceptions the symptoms of typhoid fever in infancy are essentially the same as in adults, but that the course is shorter and the mortality much larger. The conclusion seems justified that the type of typhoid in infancy, at least as regards its symptomatology and diagnosis, is the same as in adult life. It seems probable, therefore, that the reported cases afford a fairly reliable basis on which to determine the frequency of typhoid fever in infancy.

These conclusions must be accepted as essentially correct, if the cases on which they are based are representative. It is possible, however, that they comprise only the severe and fatal cases, and that many other milder cases have been passed unrecognized. If so, they are misleading. The two other methods for determining the type of typhoid in infancy, namely, the use of the Widal test in large series of cases not clinically typhoid, and routine bacteriological examinations in large numbers of autopsies, should settle this point. I know of but two comparatively small series of cases in which the former method, and of none in which the latter has been used.

Dr. Thayer and I, in 1898, tried the Widal test in 50 cases of gastro-enteric diseases in infancy. A positive reaction was obtained in but one case, and in this instance the agglutinative reaction may possibly have been transmitted from the mother. Our results were, therefore, essentially negative. Dr. Churchill, of Chicago, had the blood of 65 infants suffering from diarrheal diseases tested for the Widal reaction last summer. A positive reaction was obtained in four. Two of these died. Unfortunately, the cases were not carefully followed, and the rather meagre data teach us little or nothing as to the type of the disease in infancy.

Although the results thus far obtained from this method of investigation have been unimportant and inconclusive, it certainly seems to offer the most favorable means for determining the type of infantile typhoid, and indirectly the frequency of its occurrence. It must, however, be carried out in large series of cases, preferably in times of epidemic or in cities in which typhoid is prevalent. We cannot hope to get much help from such healthy cities as Boston and New York, but must look to such unsanitary places

as Philadelphia and Chicago for the solution of the problem.

Conclusions.—Typhoid fever occurs in infancy. Except for the lessened exposure in the first year through food, there is no apparent reason why typhoid should be less common in infancy than in later life; in fact, because of the greater susceptibility of infants to bacterial infection, it should be more common. Nevertheless, judging from the number of cases reported it does occur less frequently. This infrequency may be real or apparent. If apparent, it must be because the disease is unrecognized or mistaken for other conditions. Analysis of the reported cases, in which the diagnosis rests on a positive Widal reaction or positive cultures of the typhoid bacillus, shows that the type of typhoid fever in infancy, at any rate as regards its symptomatology, is essentially the same as in adult life. It is possible that this conclusion may be erroneous, as it may be based on the severe cases alone, the milder having escaped notice. The Widal test in large series of cases not clinically typhoid, and bacteriological examinations in large series of autopsies, offer the best means of solving this problem. The results thus far obtained by these methods are unimportant and inconclusive. They should be continued in large numbers of cases, especially in epidemics and in cities where typhoid is prevalent. In the light of our present knowledge, the symptomatology of typhoid fever in infancy is essentially the same as in adult life, and it is really and not apparently infrequent at this age.

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SOME CASES OF PROSTATECTOMY, OBSERVED AFTER AN INTERVAL.*

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THE condition of our patients upon whom we have operated, observed after a considerable interval, is always interesting.

The utility of certain operations is sometimes questioned, especially by our purely medical brethren, on the ground that we record our cases as cured because they are alive and able to walk out of the hospital. Without questioning the justice of this criticism in certain cases, it is always gratifying and instructive to learn that the improvement in health following a serious surgical procedure is satisfactory and permanent.

These remarks apply to cases of prostatectomy with especial force. In this condition the sufferings of the individual have been so great that permanent relief must be an inestimable boon. Upon pathological grounds, moreover, an interesting question arises, viz., we know that in advanced cases of prostatism at least, the condition depends not only upon the obstruction to urination produced mechanically by the enlarged gland, but also upon degenerative changes in the muscular structure of the bladder, and it might be assumed upon reasonable grounds that such changes would cause a permanent and perhaps progressive loss of expulsive power on the part of the bladder, resulting in insufficiency of even a progressive character and attended by a continuance of bacterial growth and cystitis.

Many of the cases also from whom the prostate has been removed suffer for a very considerable time from more or less complete loss of the sphincteric action of the muscles normally operating to prevent the leakage of the bladder contents—in other words they dribble. Whether this condition is ever a permanent one is a subordinate question of some interest.

The cases of prostatectomy in which I have been able to trace the later history of the individual are few, but I feel that, owing to the comparatively short time since this operation came to be generally performed, their presentation

* Read before the Section on Genito-urinary Surgery, Academy of Medicine.

needs no apology. I trust that this paper may call forth from the members of the society a relation of their own experiences in regard to the ultimate results of prostatectomy.

The cases of prostatectomy which I have done were operated upon by a perineal incision. A second abdominal incision having been used to afford access to the prevesical space, the fingers of the left hand inserted into this abdominal wound afforded counter-pressure for the fingers of the right hand working in the perineum. This method was first used by me on October 3, 1899.

It had been suggested by Dr. Parker Syme that an opening should be made into the peritoneal cavity above the pubes for the purpose of introducing the fingers of the left hand and pressing the prostate downward toward the perineum. It occurred to me that an incision into the prevesical space would be equally efficacious and perhaps less dangerous. It was, of course, the intention of Dr. Syme to sew up the peritoneal wound after the enucleation was completed, and it seemed to me that a defilement of the fingers of the left hand would be pretty sure to occur during the operation, with possible danger of infecting the peritoneum, and that perhaps an infection of the prevesical space might be less dangerous. Be that as it may, my first prostatectomy was operated upon in this manner. I sought to avoid infection of the suprapubic wound by making this part of the operation with gloves. The glove was then removed from the right hand and the perineal operation was performed. After draining and packing the perineal wound a fresh pair of gloves was put on and the suprapubic wound was sutured. Primary union of this portion of the wound occurred. At the time I attached no particular consequence to this trifling modification of the operative technic, and I have always been ready to agree that in a considerable number of cases the suprapubic incision opening into the bladder offers advantages in certain directions. I believe, however, that the suprapubic incision of the bladder itself is not always necessary or even desirable, and that primary union of the suprapubic wound, if such be made at all, can best be obtained by an incision into the prevesical space which does not open into the bladder.

I am aware that in slender, thin individuals perineal prostatectomy can be performed quite well without any suprapubic incision at all or by the use of some device for drawing down the prostate into the perineum, such as the water-bag of Dr. Syme, or by means of a hook introduced into the prostate through the rectum, as suggested by Dr. Gibson.

At the time I showed my first case of prostatectomy, on January 24, 1900, at a meeting of the New York Surgical Society, I was unaware that the incision into the prevesical space without opening the bladder had been used by anyone else. I subsequently learned that Dr. J. P. Bryson, of St. Louis, performed an operation in the

same manner, at least as early as December 5, 1898.

According to the *St. Louis Medical Review* this modification was first suggested by Dr. Bryson in the issue of that journal of April 1, 1899.

A similar technic has been developed by Dr. Guiteras, published in the *Philadelphia Medical Journal*, April 20, 1901. Any small credit, then, which may belong to the originator of this modification of technic undoubtedly belongs to Bryson.

The perineal incision which I have used is the curved incision convex forward, extending across the perineum about on the level with the bulbous portion of the urethra.

After separating the muscles surrounding the urethra from the anterior extremity of the sphincter ani, the prostate is exposed by blunt dissection. A sound in the urethra affords a convenient guide during this part of the operation. When the prostate is reached it is pushed downward by the fingers of the left hand, inserted into the suprapubic wound, and it is usually possible in uncomplicated cases and with suitable retraction to expose the lower or perineal surface of the prostate to the eye. An incision is then made obliquely upward and outward through the capsule of each lateral lobe of the gland. The enucleation is then accomplished by separating the capsule of the gland with the forefinger of the right hand.

The most adherent surface is that in contact with the floor of the urethra, and a tear at this point usually occurs in separating one or the other lateral lobe. Through this opening the drainage tube is subsequently introduced into the bladder.

During the enucleation the downward pressure of the forefinger of the left hand is of the utmost practical utility for two reasons. The first reason is self-evident, viz., a point of counter-pressure is thus constantly maintained against which the enucleating finger is working. The second reason has not, I believe, attracted the attention it merits. It is that by the downward pressure the prostatic plexus of veins is put upon the stretch and their lumina obliterated. While the pressure is exerted the hemorrhage during the enucleation is at a minimum. When the pressure ceases profuse venous oozing occurs. Every ounce of blood lost by an old man diminishes his chances of a rapid return of strength and prolongs his confinement to bed, so undesirable in these elderly patients.

After the enucleation is completed the finger of the right hand may be introduced into the rent in the prostatic urethra and the bladder explored bimanually for stone or other complications.

While in the majority of instances a suprapubic opening into the bladder may not add materially to the immediate risks of the operation it does not appear to me in the average case to possess material advantages. If it be asserted that a suprapubic opening provides better drainage, it may be said in reply that perineal drain-

age is, in the experience of many, entirely satisfactory.

Moreover, it is hard for me to believe that the almost inevitable soiling of the suprapubic wound with infectious urine is to be regarded as an entirely innocuous condition. Indeed, in a case recently operated upon by me for the removal of the prostate, a former suprapubic operation for stone, done by another surgeon, was followed by urinary infiltration of the abdominal wall putting the patient's life in jeopardy and involving a slow and tedious convalescence.

There can be no question but that perineal drainage is less difficult to take care of, and if suprapubic drainage is imperfect, the abdominal wall is macerated in ammoniacal urine, rendering the patient a disgusting object to himself and others.

Although my cases have been too small in number to base upon the results any general conclusions yet, as far as they go, they would indicate that in individuals operated upon before the muscular tone of the bladder and replacement of the muscular bundles by connected tissue have advanced to a marked degree, there is no special tendency for the loss of power to expel the urine to become progressive; or, if such tendency exists, it is but slight. A résumé of the four cases observed after an interval substantiates this view:

Case I.—Aged sixty-one years; prostatectomy Oct. 2, 1899. Symptoms of prostatism had existed for five years; residual urine, 5 ounces. Jan. 24, 1900, residual urine, 1 dram—no cystitis; Jan. 2, 1903, residual urine, 1 ounce—no cystitis.

Case II.—Aged fifty-eight years; prostatectomy Feb. 15, 1901. Symptoms of prostatism had existed for four years; marked cystitis; absolute retention for four months. Examination three months after his discharge from the hospital, no cystitis; no residual urine. Examination Jan. 10, 1903, normal frequency of urination. A few shreds in the urine; residual urine not sufficient to flow through the catheter—estimated at one dram.

Case III.—Aged fifty-seven years; first attack of retention a few weeks before admission. Since then complete retention with dribbling. Bladder enormously distended. Prostatectomy July 18, 1901. Forty-five days later, urine normal; amount of residual urine too small to be measured. Examined Jan. 2, 1903, normal frequency of urination. Urine contains a faint mucous cloud; residual urine, 1½ ounces.

Case IV.—Aged sixty-four years; history of prostatism extending over nine years; severe cystitis; residual urine, 1 pint. Prostatectomy August 17, 1902. Fifty-six days later amount of residual urine very small. Cystitis cured. Five months later urination was said to be of about normal frequency. Urine for most part entirely clear. His residence is in another State, and his amount of residual urine I have been unable to obtain.

In order to illustrate the method of removing the prostate which I have pursued in these and other cases, I will read the history of Case III:

Prostatectomy, H. E. K., aged fifty-seven years. Merchant, native of Germany. Was admitted to the hospital July 14, 1901, complaining of retention of urine, with dribbling. The patient is a large, stout man, obese and rather flabby. He has a marked alcoholic habit. Has in general enjoyed good health and has never had any derangement of the genito-urinary tract, except gonorrhoea, forty years ago. He has had retention of urine with dribbling for the past ten days, and has been catheterized twice during this time. The urinary bladder forms a large tumor reaching to the umbilicus. Sixty-four ounces of urine were withdrawn through a catheter and replaced by a pint of warm boric acid solution. While the bladder was empty, rectal examination showed a marked enlargement of the prostate. The urethra was found to be free from stricture. During the next few days the patient's inability to urinate continued. He suffered from an enormous polyuria. His urine was of low specific gravity, contained albumin and a few blood cells. Prostatectomy was proposed and done four days after his admission to the hospital. Gas and ether anesthesia. A two-inch vertical median suprapubic incision was made in the median line of the abdomen into the prevesical space. The patient was then placed in the lithotomy position. A sound was then introduced into the urethra. A curvilinear perineal incision convex forward was made extending from ischial tuberosity to ischial tuberosity. Anteriorly in the median line this incision crossed the perineum at a point a little in front of the tendinous raphé between the muscles surrounding the bulbous portion of the urethra and the sphincter ani. The skin and fascia were divided in the line of incision and the muscles of the bulbous portion of the urethra exposed. The tendinous raphé between the muscles surrounding the urethra and the sphincter ani was cut with a scissors and the rectum was separated from the urethra by blunt dissection with the forefinger of the right hand until the prostate was exposed. Two fingers of the left hand were then introduced into the suprapubic wound and used to press the prostate downward into view. In order to accomplish this the urethra was drawn forward and the perineal flap backward by means of retractors. The capsule of the prostate was then incised upon either side of the median line obliquely upward and outward.

Enucleation of the prostate was accomplished by the forefinger of the right hand working within the capsule, the fingers of the left hand being used for counter-pressure. Before the enucleation was completed the mucous membrane of the prostatic urethra was torn to a moderate extent, the bleeding was controlled largely by continuous pressure downward with the fingers of the left hand. Drainage of the bladder by means of a large thick-walled catheter

passed into the perineal wound and through the rent in the prostatic urethra into the bladder. Sterile gauze packing introduced upon either side of the catheter into the cavities, left after the removal of the lateral lobes of the prostate. Partial suture of the perineal wound at either angle. Suture of the suprapubic wound with clean gloves. The post-operative treatment consisted in systematic irrigations of the bladder with boric acid solutions, and the administration of urotropine by mouth. Perineal tube removed on the tenth day. Thirty-four French sound passed through the urethra into the bladder once every five days thereafter. Patient up on the twentieth day. No notable disturbance of temperature or pulse occurred.

Patient continued to leak through the perineum for six weeks, after which all the water was passed through the urethra. There was no cystitis. Amount of residual urine at the time he left the hospital was not noted. It is said to be small. This patient was examined Jan. 2, 1903. His general health, he states, is perfect. This coincides with his appearance. He says there are no symptoms to attract his attention to his urinary apparatus. He urinates at intervals from four to five hours during the day without effort and without pain. Only occasionally when he drinks beer is he obliged to rise at night. His urine shows only a faint cloud of mucus. The residual urine measures $1\frac{1}{2}$ ounces.

Case I.—R. M., aged sixty-one years; entered the hospital Oct. 2, 1899. He gave a history of difficult urination with occasional attacks of retention extending over a period of five years. The patient was a small man, fairly well nourished. Examination showed a moderate symmetrical enlargement of the prostate. His urine showed the presence of well-marked cystitis. Residual urine five ounces. The patient was obliged to pass water every few minutes by day and at frequent intervals during the night. He suffered continual pain and was anxious to submit to a radical operation. Casts were not detected in the urine. Operation on the second day after admission. Suprapubic incision into the prevesical space. Curved incision in the perineum as described. Enucleation of the prostate. Suture of suprapubic wound. Perineal drainage. Primary union of suprapubic wound. Perineal drain removed on the tenth day. Stay in bed eighteen days. Leakage through the perineum for several weeks longer.

This patient was examined Jan. 24, 1900. At that time he had one dram of residual urine. He urinated with about normal frequency. His urine was clear. He suffered little or no pain. Examined again Jan. 2, 1903, three years and three months after operation. General health good. Urination every three hours during the day. Urinates once during the night. Urine absolutely clear. Occasionally at the end of urination he has a little twinge of pain as the prostatic urethra is closed. Has not had sexual intercourse since the operation, although he has de-

sire and occasional erections. He believes that these are not complete. Residual urine, one ounce. He takes urotropine from time to time.

Case II.—S. B., aged fifty-eight years. Admitted to the hospital Feb. 11, 1901. No venereal disease. Patient is rather poorly nourished. Always well, except for bladder trouble, which commenced four years ago. Since then gradually increasing difficulty in urination. Four months ago retention. Occasional catheterization since that time. For the past fortnight retention has been complete. Moderate enlargement of the prostate to be made out per rectum. The left lateral lobe feels twice the size of the right. Urine withdrawn through catheter shows moderate cystitis with acid urine and a few granular casts. The patient was put upon urotropin and his bladder was irrigated with boric acid every eight hours for four days. Twenty-four hours' quantity of urine, 50 ounces. Prostatectomy Feb. 15, 1901. Two-inch vertical cut in the median line above the pubes opening the prevesical space; curved perineal incision as described. Exposure of the prostate. Prostate easily pushed into view with fingers of left hand introduced into the suprapubic wound. Incision of the capsule of the prostate on either side of the urethra and enucleation with the forefinger of the right hand. Perineal drainage with large rubber tube and packing. Suprapubic wound closed. Moderate hemorrhage during and moderate shock after the operation. Bladder irrigated daily through perineal tube. Perineal tube removed on the tenth day. Patient sat up on twelfth day. Thirty French sound passed every four days afterward, for sixteen days. Patient left hospital on thirty-ninth day. In this case the bladder ceased to leak through the perineum at an early date, and at the time the patient left the hospital the functions of the bladder had become nearly normal. The prostate seemed to contain rather more glandular tissue than usual. Its removal was very easy.

The patient was seen after an interval of three months. At this time he urinated with normal frequency and good force. There was no residual urine. His urine was entirely clear and free from pus. He had gained 25 pounds in weight. Examination Jan. 10, 1903. General condition excellent. Urination painless. Urinates three times during the day. Rises once to urinate at night. Urine, clear, contains a few shreds. Residual, one dram not enough to flow through catheter. Does not have erections.

Case III was described in a preceding column of this article.

Case IV.—G. H., aged sixty-four years. History of difficult urination extending over nine years. For the past two years his condition has grown much worse. Pain has increased, cystitis at times has been severe. For some time past he has had involuntary dribbling at night. The patient is spare in physique. He has moderate arterial sclerosis. The prostate feels uniformly enlarged. Residual urine, one pint. The urine

is alkaline. Specific gravity 1.010, contains albumin, blood and pus but no casts. He was operated upon Aug. 17, 1902. Prostatectomy was done easily by the operation already described. There was very little bleeding and no notable shock. The perineal tube removed on the seventh day but reinserted on the twelfth day on account of rise in temperature. Removed permanently on the twentieth day. Patient up on the twenty-first day. Daily irrigations of the bladder with boric acid alternating with permanganate of potash solutions. Urine first passed per urethram on the twenty-first day. Thirty-one French sound introduced through the urethra into the bladder once a week. Fifty-sixth day all urine passed through urethra. Upon leaving the hospital this patient had gained in weight and strength. The pain and discomfort connected with his urinary apparatus had disappeared. His urine contained only a few pus cells. Four months after operation patient states that his general health is fair. Urination is performed with comfort. His urine is for the most part clear. It is passed with a frequency only slightly greater than normal. Patient lives in another state, hence the amount of residual urine cannot be determined.

On Feb. 24, 1903, this patient reports himself greatly improved in general health. He states that as far as his urinary organs are concerned he is conscious of no discomfort whatever.

In all the cases observed after an interval sexual desire has been absent or notably diminished. Erections have either been absent or feeble.

CASE OF BOTHRIOCEPHALUS LATUS IN A WOMAN IMMIGRANT, WITH REMARKS ON THE OCCURRENCE OF THIS PARASITE IN AMERICA.*

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MRS. WEISS, born in Russia, female, forty-six years old, married, with several children. She applied at the Good Samaritan Dispensary in November last for treatment for a tapeworm. She had been in this country a few years. Had been passing segments of worm for years before her arrival (eight years in all, to her own knowledge), but had been so little inconvenienced that, to use her own words, "she thought she would wait to be treated till her children were grown and she had more time." She looked well-fed and plethoric, and complained only of vague digestive discomfort.

Oleoresin of male fern, preceded by the usual regimen, promptly expelled the worm complete.

I have been able to find no authentic notices in medical literature of a case of *Bothriocephalus* unquestionably of endemic origin in the United States or Canada, though it is said (authority not perfectly satisfactory) to be common in

Mexico. George Dock (American System of Practice of Medicine) has observed three cases, two in Texas and one in Colorado, all imported. He knows of no endemic cases. Osler's account is to the same effect. Max Braun, in the last edition (1902) of his *Thiersche Parasiten* mentions a single case, reported from Philadelphia (without reference to the authority quoted or statement whether or not the case was imported).

I have observed in the last three years three other cases of *Bothriocephalus* (or *Dibothriocephalus*, as Braun writes it, returning to the original name), all among the same class of Russian immigrants. All of these patients enjoyed comparatively good health, with no special evidences of anemia, and no symptoms other than indefinite distress in the belly. One, a girl of nine years, had been brought by her parents to this country three years previously. The parents were positive that she had never passed tapeworm proglottides till three months before I saw her. I believed at first that I had discovered a true endemic case, but afterward concluded that the mother was too ignorant to serve as a credible witness. This case has therefore been classified with the others.

Note.—Dr. James Ewing mentioned in the discussion that he had reported to the New York Pathological Society some years ago an imported case of three worms in one patient, a Swede. Dr. Theodore Janeway also mentioned a case recently in his own care, imported, in which there were no signs of anemia.

40 East Fifty-eighth St.

HERNIA.*

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HERNIA, being synonymous with Rupture, is applied in general terms to the escape of any viscus through a congenital or pathological opening from the abdominal cavity where it is naturally contained.

Some herniæ are rare and will not be considered in this paper. Only inguinal, femoral and umbilical herniæ are under discussion because of their pathological importance, the frequency of occurrence and amenability to treatment.

The inguinal herniæ are of two varieties, oblique and direct.

The oblique or external may be congenital or acquired, and due to a predisposing weakness or imperfection in the tissues comprising the inguinal canal, *i.e.*, such as the non-closure of the vaginal process of the peritoneum following the prenatal descent of the testicle, and such herniæ are a frequent accompaniment of cryptorchism; another cause being the possible adhesion of a viscus to the peritoneal covering of the testicle

* Reported to the New York Pathological Society, Jan., 1903.

* Read at the Annual Meeting of Rockland County Medical Association, Nyack, Jan. 27, 1903.

within the abdomen, the descent of which causes a hernia to be drawn down with it.—(Sultan "Abdominal Hernias," Ed. by Coley.)

There are a number of anatomic peculiarities of congenital inguinal hernia, recently described by Bayer, which I need not enter into here (*loc. cit.*).

The acquired oblique hernia always follows the course of the inguinal canal with the spermatic cord and its vessels, and may stop at any point in its descent. When it does not appear at the external orifice it is termed incomplete and called a bubonocoele. If, however, it passes through the external ring, it becomes *complete* and usually descends into the scrotum.

The fine anatomic distinctions of herniæ serve but to confuse and need not occupy our attention as they possess no particular consideration of a practical bearing upon treatment.

The direct or internal inguinal hernia protrudes directly through the internal inguinal fossa, being the space at the outer side of the rectus, which has no muscular covering, so that, in advancing years and relaxation of the abdominal parietes, a hernia bringing a portion of the relaxed abdominal wall before it can easily protrude at the external abdominal ring.

There is no preexisting canal here, hence this variety of hernia is never congenital and occurs only in adult or advanced life, being usually acquired as a result of chronic bronchitis or some other cause increasing intra-abdominal pressure. They are globular in shape, frequently bilateral, and seldom scrotal.

The Importance of Hernia.—The inguinal and femoral are the most common types, and their frequency depends upon sex, age, occupation and locality. Without going into elaborate and detailed statistics quoted by various authorities, the ratio of ruptured persons is about 1 to 15 in men and 1 to 40 in women (Agnew). More recent European statistics give 4.4 per cent., ranging from 19.6 per cent. in the first year to 1.14 per cent. in the fifteenth year. (Berger.) As this affliction is responsible for the lessening of the earning power of the individual by 10 per cent., with a reducible hernia perfectly retained, it can be somewhat appreciated what the large number of affected cases means in the unequal struggle for maintenance, to the sufferer and his family, and to the industrial economy of the State; and correspondingly greater if the hernia is retained with difficulty, is irreducible or of large dimensions. (Sultan.)

Etiology.—Predisposing factors are seldom if ever wanting, such as anatomical weakness and defects of a congenital nature. Malformations, as a subperitoneal lipoma acting as a wedge and making traction on the peritoneum, producing a true hernial sac. An ectopic testis is usually accompanied by a hernia. Other causes I have previously referred to.

Heredity is certainly a remarkable element and frequently observed in the hospital clinics, where

several members of the same family are subjects of hernia.

Chief of the exciting causes is increase of intra-abdominal tension, coupled with a congenital predisposition; straining at stool, sneezing, lifting, blowing wind instruments, logging, long and exhaustive marches, tight belts, *especially in infancy*; the sitting posture, favoring weakening of the abdominal muscles. Phimosis in infants causing reflex irritation of the vesicle neck in straining to micturate. The development of the hernial sac is favored by rapid emaciation, and also by the accumulation of fat, and excessive length of mesentery. Traumatic herniæ are infrequent because there must have already existed a congenital sac.

Symptoms.—Many cases of acquired hernia, of the inguinal oblique and femoral varieties, are unable to give a definite history of onset, while others can define the sensations occurring subjectively when the hernia is produced by some physical exertion. There is usually a feeling of something having suddenly given way, a stinging or burning sensation in the locality, while the pain may be referred to some distant part, as for instance to the umbilical region. There may be nausea and a feeling of faintness, followed rapidly by graver indications.

The objective symptoms may be wanting, but cases have been reported where a viscus has been protruded, and produced immediate strangulation.

All herniæ produce discomfort, with frequently more or less local and reflected pain and colic; dyspeptic symptoms; a sensation of weakness and insecurity upon exertion; difficulty in rising from sitting posture and maintaining an erect position; inability to endure enforced or prolonged fatigue; an altered sensation down the legs, due to the pressure of the hernia or a truss pad on the ilio-inguinal nerve; often a coldness; sometimes partial anesthesia; the bowels are frequently constipated and irregular; and pain is experienced at stool. Bladder symptoms usually exist in old and neglected cases; and the mental condition of the patient is often one of depression, introspection and self-consciousness. The symptoms of an irreducible or incarcerated hernia may be all those enumerated above and frequently exaggerated. In cases of strangulation all degrees of intestinal obstruction are present from those of a mild type (where only omentum may be strangulated) to the more profound, with shock, rapid pulse, subnormal temperature, vomiting, obstipation, and abdominal pain are present.

Diagnosis.—The first point in diagnosis of inguinal hernia in the male is to ascertain if the testicle and cord are in the scrotum. If in the inguinal canal, whether they can be brought down into the natural repository or reduced into the abdomen. If the latter, by invaginating the scrotum with the finger (or the loose tissue of the mons in the female), to ascertain whether the orifice is above or below Poupart's ligament. If

below, it is femoral; if above, an inguinal oblique. Should it be internal to the inguinal canal in an elderly person, with a history of acquiring it after middle life, in shape oblong or globular, and not scrotal, it belongs to the direct variety.

If a moderately sized hernia, located in the groin, what other affections may it be confounded with? If the tumor is in a male and reducible, it is most likely an inguinal hernia, as the hernial orifice can easily be determined, as indicated, in most subjects; yet in a very fat woman it is often difficult to determine whether the orifice is above or below Poupart's ligament.

Again, in very large scrotal hernia, to which side does the hernia belong? When reducible the side to which the hernia can be made to return, and the location of the testicles will serve as reliable guides, as the testicle of the healthy side remains in the proper position, while the other is posterior and pushed downward.

Nearly all scrotal hernia in infants and children appearing soon after birth are congenital.

An existing hernia, reduceable through the internal inguinal ring, the canal being empty at time of examination, can be diagnosed by a slight amount of abdominal fluid perceptible in the hernial sac, felt in the course of the canal, the patient being in the upright position.

In adults the increasing size of a hernia gradually dilates the inguinal canal and finally causes it to lose its oblique direction, often making it difficult to determine an oblique from a direct hernia. The latter usually stops at the root of the penis and rarely descends into the scrotum.

As an inguinal hernia can be mistaken for a retained or dislocated testis, swollen lymphatic glands, psoas abscess, a subperitoneal lipoma, cyst of the round ligament and frequently for a hydrocele of the cord, it is important to be able to differentiate these conditions.

We should commence with inspection by systematically examining the patient after a careful history and cross-questioning which will furnish subjective information. Does the tumor correspond to one of the hernial openings, and has it a pedicle attached within the abdomen? Does it change with the position of the patient, and is the impulse exaggerated by coughing? In palpating the tumor, does its base enter the orifice within the abdomen, or can it be separated by the thumb and finger?

Among the surest signs of hernia are its reducibility, tympanitic sound, and gurgling on manipulation when bowel is involved. If omentum, it has a doughy feel, lumpy, and reduction more difficult, with absence of gurgling. When incarcerated, the diagnosis is more difficult, yet the antecedent history of the case helps to confirm the diagnosis.

As all abdominal hernia are subject to the same general laws it does not seem necessary to go into details regarding the recognition of the others, as anatomical landmarks serve to give them a name. The following are the main features of *inguinal hernia* and *hydrocele testis*:

ANAMNESIS.

"The tumor appears suddenly during an augmentation of the intra-abdominal pressure; or gradually, in which case the swelling is first noticed in the abdominal wall and the enlargement is toward the testicle.

The swelling develops more slowly, not rarely after a contusion of the scrotum or inflammatory changes in the epididymis.

The swelling commences in the bottom of the scrotum and gradually spreads toward the abdomen.

With a single exception (*hydrocele communicans*) they do not suddenly change in size.

INSPECTION.

"The swelling seems to be directly continuous with the tissues of the abdomen.

"The swelling is not translucent; in rare cases, in very young children, it may be translucent.

The swelling is usually sharply circumscribed from the abdomen.

The swelling is translucent; if the walls are very thick, or if spermatic fluid or blood is present, it may not be translucent.

PALPATION.

"If an attempt is made to draw the tumor away from the abdominal wall between the thumb and index finger, a portion of the tumor is felt passing into the abdominal cavity.

"The tumor may be replaced.

If the same attempt is made nothing is felt between the tumor and the abdominal wall but the constituents of the spermatic cord.

The volume of the tumor remains unchanged upon pressure (with the exception of a *hydrocele communicans*).

PERCUSSION.

"Under certain circumstances, a tympanitic note is obtained."—(*loc. cit.*)

Always dull upon percussion.

Prognosis.—The common forms of all abdominal hernia tend to recovery by mechanical means during the first two years of infancy.

After the child is able to run about in the erect posture, mechanical treatment becomes less efficient and cures are the exception instead of the rule. There are many reasons for this. An active child rebels against the irksome restraint of even the best fitting truss; carelessness upon the part of parents, in their attentions, and often an improper appliance is worn.

Prognosis in the operated cases depends upon the conditions, the kind of hernia, age, etc.

Operations of election by the Bassini method in inguinal hernia are seldom failures, and a death in one to 300 to 500 is quite a high rate of mortality. Recurrences in femoral are occasionally seen. Umbilical will furnish the highest death-rate because of the class of subjects afflicted, corpulent, full habit, with poor heart and kidneys. The mortality in strangulated cases depends, like appendicitis, on the time of operation.

Treatment, Mechanical and Surgical.—The management of hernia to-day is tending more toward the radical than ever before, because of the safety of operation in a death-rate of infinitesimal proportions, the decreased likelihood of relapse since the newer methods have devised a secure operative procedure, and the short time spent in confinement to bed (being about ten days), the percentage of cures being one-hundred in those cases of primary union in healthy subjects.

Yet, no matter how much advance there may be in the art of surgery, the mechanical treatment of this affliction must always remain the chief source of relief to the vast majority of sufferers. The reasons for this are so obvious to us all when a patient consults us that to give them, to emphasize the statement recorded, would be superfluous.

To all infants with uncomplicated conditions the application of a properly selected and well-fitting truss, coupled with a reasonable intelligence of the mother or nurse, will effect a cure within a year or eighteen months in 90 per cent. of all cases, under safe-guarding observation by the medical attendant. This is because the inguinal and umbilical herniæ are most amenable to such treatment, and usually are the only varieties met with in this period of life.

Recumbency of the little patients prevents the hernia descending through the patulous orifice except in straining, when the pressure of a truss *over the ring* affords necessary protection. Recovery takes place not by any occlusion of the sac or by adhesive inflammation, as has been generally concluded, but by a true retraction of the sac within the abdomen.

I will not enter into the history of trusses, which is very interesting, as space does not permit, but state my reasons for the rejection of the ordinary forms on the market, and the ones usually sold by the dealer or selected by the wearer.

The German and English patterns are mostly used, and I cannot express my condemnation of them in sufficiently strong terms, because the pad, resting as it does on the pubic bone, allows the hernia to protrude through the internal inguinal ring, acting constantly as a dilating wedge in the whole course of the inguinal canal. Its prolonged use tends to enlarge the opening and eventually causes the internal ring to widen down into the external, until it becomes one immense aperture into the abdominal cavity. Therefore all possibility of a cure resulting spontaneously from a proper retention of the hernia is absolutely removed, and the condition made worse.

This objection applies to most of the different forms of continuous spring trusses where the pads are placed upon descending arms and exert the pressure in a direction that invariably enlarges the hernial openings and canal.

Sir Astley Cooper, in the early part of the last century, appreciated these defects. He stated: "The object in applying a truss is to close the mouth of the hernial sac, and destroy its communication with the abdomen, and this object can

never be perfectly fulfilled by any truss which is applied upon the external abdominal ring."

"The essential requisites of a good truss," says Holmes (Syst. Surg.) "are these, that it should fit easily, should not shift by any movement of the patient's body, not gall the skin, or any part project against the abdominal wall; its pad should cover the hernial aperture and its pressure should be directed properly, and should be great enough to prevent the descent of the hernia in any position or exertion which the patient may make; but it should not be so severe as to cause enlargement of the opening; the pads should be supported with the least possible force or the application will become irksome. . . . Variations in pressure are very essential in order to adapt it to different circumstances; finally the direction in which the pressure is made must correspond to that of the inguinal canal."

The cross body or Marsh truss and the Hood pattern meet these requirements admirably. The former includes fully two-thirds of the body, and is applied from the opposite side; the points of pressure being over the internal inguinal ring and the gluteal muscles of the affected side by a counter-pressure pad on the distal end of the spring. When shaped to the individual form it is worn with comparative comfort and security. The pad and pressure should be suitable to the case under treatment. This truss is best suited for femoral hernia as well as inguinal oblique.

The Hood truss is an encircling spring with solid front, carrying one or two hernial pads, and open at the back, being fastened by a short connecting strap. The spring being of German silver is readily malleable, and when these trusses are covered with an impervious material they are cleanly and comfortable. This truss is so shaped that it passes about the pelvis at the most immovable point, and is, like the cross-body, entirely out of the way of the muscles of locomotion, allowing perfect freedom in all movements of the body.

These two forms of trusses are efficient, and combine security with ease of wearing when properly fitted, being suited to all ages and conditions that admit of a hernia being retained by mechanical means.

Belt trusses are only mentioned to condemn, as they constrict the hips, giving very little pressure over the inguinal region where it is most needed. They have a place as a night truss, when it becomes necessary to employ one where a persistent cough is present. That patients afflicted with hernia who consult the average physician are not advised and treated as other medical cases are is manifestly true, the usual advice being "Go to the druggist and get a truss." This vague prescription is chargeable, to say the least, to listlessness of physicians, who thereby forfeit a kind of professional service, through inability to apply mechanical therapeutics for which they could justly claim compensation. By proper forethought the profession could instead reserve to its own members a pro-

fessional duty which now goes by default to druggists, who are seldom more qualified, and should be considered less so than the physician, to perform it. Infinitely more satisfactory for both patient and physician would it be if professional selection and guidance were exercised for the sufferer's benefit in the proper adjustment of a suitable appliance. The whims and prejudices of patients, and their crude ideas formulated from the continual failures and discomforts of badly fitting trusses, as to what is needed for their cases, are seldom reliable guides in the selection of a suitable appliance.

In an address to the New York Medical Association meeting in 1889 Dr. Jos. D. Bryant said:

"The greater number of medical men of the present day are blissfully ignorant of the truss armamentarium now in the market, also of the measurement, means, and method of fitting them properly to patients. The patients thus afflicted are relegated to the 'instrument makers,' or to other mechanical agents for the proper (?) truss or appliance, and the application of it. In a large number of cases, no doubt, this course on the part of the medical man is actuated by the sense of his own inability to meet the demands of the case; when this is the true cause, while we may commend him for his sincerity, still we must respectfully submit that he is a much too willing exponent of the sentiment that teaches 'where ignorance is bliss 'tis folly to be wise.'"

Sir Astley Cooper gives these directions for fitting a truss: "Therefore, when a hernia has been returned by the surgeon into the abdomen he should lay his fingers obliquely above and to the iliac side of the ring and direct his patient to cough; and the farthest part from the ring toward the spine of the ilium, where the internal sac is felt to protrude is the point which should be noted for the application of pad of the truss and the instrument made accordingly."

Fitting Trusses.—I should not feel justified in occupying more of your time in speaking of trusses or enlarging my plea for a better understanding of the subject and the therapeutics of hernia generally, but will direct your attention to the practical side of the question of fitting them. I cannot do better than quote Prof. W. B. DeGarmo's rules for measurement and method of fitting, as given in a lecture delivered at the Post-Graduate Medical School: "After getting the measures, which should be taken by passing the tape-line around the pelvis, about two inches below the crest of the ilium, and over the internal ring, we should next secure the shape of the hips and place it upon paper, where it will be of real practical use in molding the spring for the patient. This is done by the aid of a strip of sheet-lead, half an inch wide and one-sixteenth of an inch thick, by about 20 inches long. I place this across the front of the abdomen with one end resting over the internal ring, we will say of the right side. The lead is now molded to the shape of the front of the abdomen, and

around the left hip to the center of the back or a little beyond. Having been pressed to the exact shape of the surface of the body, it is now carefully slipped off from the left side and placed edgewise upon a sheet of paper of suitable size. Its inner surface is traced around by a lead-pencil, and the process is either repeated for the opposite side, or you may simply turn the lead over, thereby completing a tracing of the circumference of the pelvis.

You should now select the size and style of spring which you desire to use, and shape it to fit this tracing. If you select a cross-body spring, begin by shaping that portion which passes over the front of the abdomen to correspond to the diagram on the paper, and so follow around, of course allowing for compression. This method so far simplifies truss-fitting as to place it within the reach of every practitioner who is willing to devote the required time to the interest of his patient.

Springs covered with hard rubber must be warmed before bending. When you have supplied your patient with a good-fitting truss, you have not fulfilled your entire duty. The subsequent care of the case is of equal importance. I keep all children under care, having them come back at stated intervals until they are cured. Usually I see them not less than once a month. Do not allow the parents to decide whether attention is needed or not, but have them bring the child back, that errors may be corrected in the fitting of the truss which they would never see. Adults should be impressed with the importance of reporting three or four times every year, even after perfect fitting is secured, that you may decide whether they are wearing their trusses right, and that their hernias are being securely held in place.

In the care of the skin, to prevent excoriation, cleanliness is of the utmost importance. The truss as well as the person must be kept clean, and, as far as practicable, dry.

Before describing the surgical treatment of hernia, it might be considered in keeping with the scope of this paper to describe the methods best suited in using taxis for recent cases of strangulation.

Taxis, or restoration of the hernial viscus to the normal position by mechanical manipulation is termed reduction or taxis.

1. *Position.*—The body should be recumbent, the knees flexed, if necessary, or such attitude as to relax muscles of part. In femoral hernia the knee of affected side should be flexed obliquely, inclining to opposite side. In inguinal scrotal, place thumb and finger of left hand at the neck of tumor to prevent invagination of intestine and overlapping at orifice and guide its course through internal inguinal ring. Grasp body of hernia with right hand, draw carefully downward and outward, then gently compress tumor, equalizing pressure as much as possible, except that it should be greatest at bottom. Gurgling often manifests the fact that the hernia has re-

ceded.* Care should be taken not to reduce the testicle with the hernia, if adhesions connect the two together. The application of ice-bags, or hot fomentations of hops often assist in the taxis of recently strangulated hernia, also the hypodermic injection of atropine gr. $\frac{1}{25}$, into the constricted ring.

In femoral hernia the pressure on the hernial tumor must be made downward, to saphenous opening, and then upward. Long-continued and too often repeated efforts at reduction are frequently followed by inflammation, particularly so in this form of hernia.

The difficulty in exerting taxis on large umbilical herniæ in fat people is the tendency for the hernial viscus to slip between the fat and the skin or muscles; and in most of these cases the sac is adherent. Sometimes there is more than one opening, and this impression may be often formed from another condition of the "pocketing" of the hernia, to one side or other of the hernial orifice in the fascia or adipose tissue. Both hands should be used and placed around it, the manipulation being chiefly conducted by the thumbs and fingers in a rolling or kneading motion.

Surgical Treatment.—It is not my purpose to describe the various methods of operating for the relief and cure of hernia, as my paper is already too long. The great names in the history of surgery are attached to some personal technic for its treatment. The object formerly sought by a radical cure was the obliteration of the sac by some means; for it was firmly rooted as an established fact that this was the primary cause of hernia. The prejudices of the medical profession die hard, and it was not until Bassini, of Padua, read his paper before the Italian Congress of Surgeons in 1888, relating his 102 cases (seven of which were strangulated) without a failure and with no mortality, at the same time stating it was his belief that it was the anatomical defects in the inguinal canal and *not* the sac per se which were responsible for hernia; and in obliterating the canal as well as the sac lay the secret of radical cure, that this operation was accepted by the profession generally. Only about a month later Halstead, of Baltimore, published a new operation almost identical to that of Bassini, excepting that in his treatment the cord is external instead of below the sutured aponeurosis.

"Bassini aims, by his operation, to completely close the hernial canal within the abdominal wall, and to form a new canal for the cord which shall correspond as much as possible to physiological conditions. His radical operation is composed of three steps:

"First step: The pillars of the external abdominal ring and the aponeurosis of the external oblique muscles are exposed by an oblique incision corresponding to the course of the spermatic cord. The aponeurosis of the external

oblique muscle is now incised up to a point above the location of the internal abdominal ring, separated from the underlying tissues, and the two flaps turned back to either side. The hernial sac is now separated from the spermatic cord by blunt dissection and completely isolated from the surrounding tissues, particularly in the vicinity of the neck of the sac, so that every trace of a funnel-like diverticulum disappears. After the hernial contents have been reduced, the sac is opened at some distance from the neck, and adhesions between the sac and contents separated, the protruding portions of omentum ligated in sections and extirpated, and the hernial sac ligated as high up as possible. The sac is then cut off one centimeter below the ligature and the stump is buried in the abdominal cavity.

"Second step: The isolated spermatic cord is lifted up and held to one side. The two flaps of the aponeurosis of the external oblique muscle are held back by retractors, and the whole mass of muscle situated internally—the larger upper portion, composed of the internal oblique and transversalis muscles, the smaller lower portion, composed of the rectus muscle—is united throughout its entire extent with Poupart's ligament by four or five mattress sutures, so that only a sufficient opening for the spermatic cord is left in the upper and outer angle of the wound.

"Third step: The spermatic cord is laid upon the newly formed posterior wall of the inguinal canal, and the two flaps of the aponeurosis of the external oblique muscle are sutured over it, thus forming the anterior wall of the new inguinal canal.

"The operation is concluded by the suture of the cutaneous wound."*

The importance of the Bassini technic lies in closing the space or bed of the spermatic cord and vessels, and making a true posterior wall that formerly was deficient. All former operations omitted this important feature, which insures against relapses. It is a most remarkable fact to think that all the great surgeons of the past never fully appreciated wherein their operations were defective, and the security this one feature of the surgical procedure in curing hernia would give in preventing recurrences; lifting the considerations of prognosis from doubt and uncertainty to one of promise and future safety.

When dealing with an ectopic testicle where the short cord prevents its descent into the scrotum, a pocket can be made in the subperitoneal space posterior to the lower portion of the rectus, and the testicle placed there where it has the protection of the lower abdominal wall.

The after-care of these cases is ten days in bed, allowing them to return home in two weeks, the wearing of a snug abdominal band of Canton flannel with perineal straps for six weeks.

In operating on femoral herniæ, the incision is made over the tumor longitudinally, exposing the

* Article of W. H. Bennett, F.R.C.S., in *Lancet*, Aug. 30, 1902.
"Dangers of Indiscriminate Attempts at Reduction of Strangulated Hernia by Manipulation."

* This concise description is given by Sultan.

hernial sac, reducing its contents, ligating it as high as possible, and excising it.

The closure of the ring is best accomplished by passing the sutures through Poupart's ligament, the pectineal fascia, and the periostum of horizontal ramus of the pubis.

Umbilical Hernia.—The tendency to this form of hernia in young children and infants to spontaneous cure when appropriately treated makes the surgical treatment rarely necessary. A gauze pad fastened by a strip of adhesive plaster encircling the abdomen and changed as required, usually effects a cure. The parts should receive proper antiseptic cleansing, the gauze sterile and some non-irritating and slightly antiseptic powder applied.

The surgical treatment is reserved to the strangulated, incarcerated, and large herniæ of adult life.

A marked advance was made by Gersuny, who suggested opening the sheaths of the recti, and uniting the internal borders of these muscles as well as the usual sutures of the hernial orifice. It is always well to perform omphalectomy and the overlapping of the muscles, as recommended by Blake, of New York, give the best results (*loc. cit.*)

Report of Cases.—*Case 2359.*—A. T., male, aged five years, right inguinal oblique. Duration since six weeks old. Operation at Post-Graduate Hospital, disclosing congenital sac. Bassini method. Primary union. Left hospital on fourteenth day.

Case 2361.—E. R., male. Right inguinal oblique scrotal hernia observed at fourth month. Ectopic testicle. Operation at Post-Graduate Hospital July 17. Bassini operation. Cord too short to allow of testicle being placed in scrotum. It was dealt with as described above. Primary union. Left hospital on fourteenth day.

Case 2373.—H. D., male, aged two years. Left inguinal oblique scrotal. Duration since birth. Size of small egg. Acute strangulation. Operation at Post-Graduate Hospital July 21. Primary union, leaving hospital on fourteenth day.

Case 2375.—I. M., female, aged twelve years. Double inguinal oblique. Duration ten years. Operation at Post-Graduate Hospital July 28. Primary union, leaving hospital on fourteenth day.

Case 2382.—L. McN., aged ten years. Right inguinal oblique. Contents omentum, congenital sac. Duration since infancy. Operation at Post-Graduate Hospital, August 19. Primary union, leaving hospital on fourteenth day.

Case (Private).—Geo. McK., aged thirteen years. Right inguinal oblique, congenital. Duration since infancy. Boy poorly nourished, weighing 84 pounds. Operation at patient's home, assisted by Dr. Maynard, on August 20. Some slight gaping of skin wound and sluggish healing, requiring confinement to bed for two weeks. This did not affect the result of operation and patient had a perfect recovery and rap-

idly put on flesh weighing 113 pounds in five months.

Case 2400.—D. H., male, aged twenty-eight years. Epigastric hernia in linea albi one inch above umbilicus. Duration, 3½ years. Content omentum. Operation September 23, at Post-Graduate Hospital. Closure of hernial openings (two) with Kangaroo tendon opening sheaths of recti and bringing edges of these muscles together over the sutured apertures. Primary union, patient leaving hospital on fourteenth day.

Case 2404.—L. P., female, aged thirty-three years. Right inguinal oblique. Duration four months, caused by coughing soon after a confinement. Operation at Post-Graduate Hospital, September 30. Primary union, leaving hospital on the fourteenth day.

I wish to acknowledge my indebtedness to the assistance I have derived from the writings of DeGarmo, Cooper, Heaton, Holmes, Agnew, Gross, Bryant, and Sultan, in the preparation of this paper. I have freely made use of quotations in some instances from these authors, full credit for which I wish to make herewith.

THIOCOL.*

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EVER since the efficacy of creosote was established in pulmonary affections, the medical profession have been striving to find a derivative of this coal-tar product which would be free from the unpleasant properties and effects of that drug. Both guaiacol and creosote act as irritants and even caustics on the mucous membrane of the entire alimentary tract. Besides this, they have an unpleasant odor and taste, on account of which the patient receives them with repugnance. They are both to all practical purposes insoluble in water, but are somewhat soluble in a 50-per-cent. solution of alcohol; however, such a solution is irritating in itself, owing to the alcohol, liability to excite coughing and leaving a sensation of burning in the throat which remains for some time after its ingestion. On account of these facts the different acid esters of guaiacol have been substituted, but while in some instances they are tasteless, yet they are all insoluble in water, and moreover are not broken up into their compounds in the stomach, but merely undergo a partial decomposition on reaching the alkaline intestinal secretions, consequently they are but a poor substitute.

More recent investigations into the synthetic chemistry of the diatomic phenols have given rise to a more successful compound of guaiacol that

* (Guaiacol-sulphonate of potassium Roche.) A soluble form of guaiacol, its uses and advantages over the insoluble derivatives of creosote, such as guaiacol, dustol, and other diatomic phenols.

is readily soluble in water, free from the taste and obnoxious odor of creosote, non-toxic, and extremely assimilable. This new preparation is called thiocol, the potassium salt of orthoguaiacol-sulphonic acid. The formula may be represented by $C_6H_3(OH).OCH_2.SO_3K$. It occurs as a white micro-crystalline, odorless, permanent powder, of a faint bitter-saline but not disagreeable taste. It is readily soluble in water and dissolves also in dilute alcohol, but it is insoluble in ether or in fatty oils. Its aqueous solution is colored blue by ferric chloride, the color changing to wine-yellow on the addition of ammonia water. Thiocol has a powerful reducing action on silver salts and ferric compounds, and at once decolorizes permanganate solution.

After the administration of thiocol, almost the total amount of sulphur from the medicament is found in the urine as sulphate, with a small proportion of guaiacol-sulphate.

The physiological action of creosote is purely as an antiseptic. It is an excellent preservative, for meat can be kept in it indefinitely. This feature, however, has always been a drawback to its exhibition in large quantities for any length of time, as it deranges the stomach and finally renders that organ unfit for work.

According to the physiological experiments made by Dr. G. Rosebach at the Medico-Chemico Institute connected with the High School at Berne, Switzerland, and by Prof. Jaquet at the Medical Clinic of the University of Basle, Switzerland, thiocol, when given per os or injected subcutaneously, is non-toxic, producing a striking increase in weight and showing no injurious effect upon the composition of the blood.

In most cases they found an increase in the number of blood corpuscles and the amount of hemoglobin; in others the quantity remained unchanged. Furthermore, the animal experiments proved the extreme assimilability of thiocol as against other guaiacol compounds—where only 7 per cent. of guaiacol was absorbed, 70 per cent of thiocol was assimilable.

The advantages of thiocol, then, over other guaiacol preparations are, after its tastelessness and freedom from unpleasant odor, its free solubility in water and permanence in the air which allows it to be dispensed as powder, tablet, or in solution; its high percentage of absorption and its non-toxicity when administered either by mouth or by hypodermic injection.

Having thus found a substitute for creosote which, besides having its antiseptic properties, is free from those objectionable features of the creosote itself, and moreover having additional advantages of its own, let us look at the pathologic conditions in which it is indicated, so that a clearer and more intelligent idea of why it produces certain effects may be obtained, and not give it simply on account of the old maxim "Post hoc, propter hoc."

As every pathologic lesion must be preceded by a change in function, we find that in the inflammatory diseases of the respiratory tract they

are preceded by a hyperemia, this hyperemia usually being induced by exposure to cold, or by irritating particles in the inspired air. The hyperemia is soon followed by a mucous exudate which is later augmented by leucocytes and red blood corpuscles, which, unless thrown off by coughing, form a nice nidus for the development of germs.

The process which, until this point has been limited to the mucous and submucous membrane of the bronchi and bronchioles, if not arrested proceeds by continuity of structure to the surrounding tissues (the parenchyma), and the inflammation becomes more intense; at the same time pressure from the accumulated products of inflammation so press upon the blood vessels that anemia now takes the place of hyperemia and degenerative changes occur, such as hepatization, yellow atrophy, caseation, etc.

Besides this, the toxins which are formed by the bacteria that gain entrance into this excellent culture medium and thrive there luxuriantly, affect profoundly the nervous system and also exhaust the valiant white blood corpuscles in their strenuous effort for supremacy.

This general picture covers the entire field of pathogenic changes from a simple acute bronchitis, through chronic bronchitis and pneumonia, up to pulmonary phthisis, the different forms of bronchitis depending only upon the severity and length of the attack; while the pneumonia and phthisis are due to their respective specific germs and the anatomy of the part affected.

Tuberculosis of the lung is probably the most exhausting of all diseases and the most difficult to arrest, because the bacillus, which forms the toxic ptomaines that sap the patient's vitality, is surrounded by impregnable walls of connective tissue that shut off all approach from the blood current. However, it is not only the tubercle bacillus that is at work undermining the constitution, but the staphylococcus and streptococcus, which linger more superficially in the mucous membrane and around the walls of cavities, producing a septic condition that we call the mixed infection, and which is accountable for untoward results and neurasthenic conditions.

The first and most important feature, then, after the invasion, is the germ and this calls for an antiseptic; the pyrexia, night-sweats, nervous symptoms and pain, are due to the accumulation of the products of inflammation and toxins. These are at first prevented from further elaboration by arresting the process of inflammation and killing the germ that produces them; then such material as remains must be filtered out from the blood through the bowels and kidneys by means of purges and diuretics. The accumulations in the air-passages will be removed reflexly by coughing aided by stimulating expectorants, and the irritated mucous surfaces must be soothed and gently stimulated to produce their natural secretions, so that harmonious interchange between the air and blood can take place in the alveoli. After all these things have been accomplished the nervous system must be toned

up, the broken-down tissues rebuilt, and the exhausted leucocytes rejuvenated. When all of this has been accomplished, then, and not until then, is our patient cured. It will at once be seen that in thiocol Roche we have a remedy combining all the factors necessary for such results, in consequence of its non-irritativeness and non-toxicity it does not give rise to untoward symptoms of any kind, not even with continued use; owing to its great assimilability, it affords the possibility of successfully combating phthisis, causing such symptoms as emaciation, anorexia, decline of strength, fever, night-sweats, etc., to disappear in a short time, quicker than any other medication hitherto used in phthisis, and the clinical testimony of authorities, both in Europe as well as in America, upholds this theoretical exposition most satisfactorily.

The rationale of the favorable action of all creosote preparations in pulmonary affections is not yet definitely elucidated, and should receive further investigation.

Dr. Andrew H. Smith believes that the nascent creosote liberated in the intestinal canal, circulates in the blood and has a direct exterminating effect upon germs wherever it comes in contact with them. Some observers believe that the entire body is permeated with the antiseptic material that is thus introduced, and thus bacteria causing various diseases are met and destroyed. Others claim that the action of the creosote preparations is simply that of a neutralizer of the toxins produced by the bacteria. Whether it be merely a restriction of the development of the bacteria or complete annihilation of them, the fact remains that after the exhibition of thiocol, the toxic manifestations are greatly reduced.

My own experience with thiocol has been quite extensive and varied. I have used it in acute and chronic bronchitis, pneumonia, and more particularly in phthisis pulmonalis in which latter disease I have observed its action in over 20 cases.

Resolution in bronchitis I found to take place much sooner than usual, and in pneumonia the temperature could be reduced 4 degrees in twenty-four hours; the areas of dulness and the bronchial breathing rapidly diminished, and free and easy expectoration was established phenomenally early.

In tuberculosis the night-sweats were stopped almost from the first, the fever was markedly reduced, expectoration made easier and less purulent where mixed infection existed, while the cough became less persistent and annoying. The most marked effect, however, was upon the general condition of the patient. There was less nervousness, better tone to the nervous and muscular system, the appetite was stimulated and assimilation improved. At no time was there any derangement of digestion or irritation of the stomach. The dose varies according to the severity of the disease. I usually give thiocol three times a day, starting with 5-grain doses and gradually increasing the dose each day, especially

in phthisical cases, until a maximum of from 30 to 45 grains is reached.

In thiocol Roche we have an elegant and efficacious creosote preparation that bids fair to be one of our most valuable modern therapeutic agents, and, in closing, I can give no more worthy testimony of its efficacy than by simply quoting a few cases of phthisis in which I have used it:

Observation I.—Mrs. P. S., aged thirty-one years, took a severe cold, one year ago, followed by bronchitis; had night-sweats and hectic fever; heart is excitable and irritable; both lungs consolidated with crepitant and sibilant râles throughout, expectorates a good deal; sputum shows the presence of the tubercle bacillus. She was put on thiocol in doses of 5 grains 3 times a day and this was gradually increased by one grain each time until she was taking 10 grains at a dose, making in all a total of 30 grains *per diem*. The night-sweats gradually disappeared as well as the fever, so that at the end of one month she had no night-sweats, scarcely any fever, the râles were less sonorous, expectoration was lessened, and she had gained somewhat in weight. She is still under observation and steadily improving.

Observation II.—Mr. H. B., aged fifty years, whose mother died of consumption at forty-four years of age, also one sister who died of consumption at the age of eighteen years; had grip and bronchitis two or three years ago; since then has coughed and expectorated a great deal; has had many hemorrhages, is nervous and impressionable; there are many old pleuritic adhesions at the base of the left lung with dulness at the apex. Right lung is consolidated at the back for almost its entire length; in front crepitant râles can be heard; has a temperature of 102° F. and night-sweats. He was put upon thiocol in 5-grain doses which was gradually pushed up to the maximum of 45 grains a day, with the happy result of reducing the temperature to 99.2° F., lessening the expectoration, and alleviating the cough; the night-sweats disappeared after the fourth day of treatment. He has gone south to avoid the bad weather, but is keeping up his treatment with thiocol.

Observation III.—Mr. E. C., aged twenty-seven years; parents both living; four years ago had bronchitis; aspect florid; is impressionable but not very nervous; number of respirations, 18; pulse 82; temperature 99.5° F.; digestion fair; right lung crepitant and sibilant râles at the apex, the entire base consolidated and at a point posteriorly, the evidence of an old pleurisy; at the apex of the left lung, there was a lesion which was the cause of blood in the sputum; he coughed a great deal and raised much thick sputum, which was occasionally tinged with blood; had night-sweats and hectic fever. He was put upon 5-grain doses of thiocol three times a day, which was gradually increased to 10 grains three times a day. His temperature dropped to normal, the night-sweats left him, the expectoration became thinner and ceased to

be tinged with blood, his cough was lessened, he slept better, his appetite increased, and he put on flesh. He is still taking thiocol and there is hope of further improvement in his case.

ON THE PRESENCE OF SPECIFIC COAGULINS IN THE TISSUES OF VERTEBRATES AND EVERTEBRATES.*

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IN previous investigations† I found that the blood-plasma of the lobster coagulates under the influence of a piece of fibrin of the lobster, and that a piece of the muscle of the lobster has a similar effect. The fibrin of the blood of rabbits or rats, or the muscle of frogs, were without effect. I concluded that these facts point to a multiplicity of fibrin ferments in different species, and to a similarity or identity in different tissues of the same species of animals. "This specificity in the one case and the want of it in the other case, corresponds to a similar specificity and want of specificity which has been found to exist with the precipitins obtained through injection of certain body fluids or albuminous substances into different species of animals."

I further investigated if a specificity of the substances causing coagulation existed also in the tissues of vertebrates. In a preliminary communication "On the Coagulation of Blood in its Relation to Thrombosis and the formation of Fibrinous Exudate,"‡ after an investigation of different classes of vertebrates, I published briefly, among other results, the fact that the same specificity of the tissue coagulins was found to exist in vertebrates and evertbrates. Since Woolridge's investigations it is known that extracts of various animal tissues have a marked effect on the coagulation of the blood. Delezenne found that contact with the liquids and tissues of the wound has a decidedly accelerating effect upon the coagulation of the outflowing blood in birds. The blood of birds collected in the extract prepared from certain tissues of birds coagulated much more rapidly than it would have done otherwise. He found that extracts of other than bird tissues were less active, and believed that this marked activity of the tissues of birds compensated for the slow coagulation of bird's blood which takes place if contact of the blood with the tissues is avoided.

Conradi, who recently compared the influence of tissue extracts on the coagulation of blood before and after autolysis had taken place, seems to have assumed the existence of an approximately equally strong influence of extracts of fresh tissues upon the coagulation of the blood.

A few weeks before my second paper on the coagulation of the blood appeared Hewlett published the observation* that an extract of goose liver did not have an accelerating effect upon the coagulation of dog blood. An extract of dog liver, however, did have an accelerating effect upon the coagulation of bird blood. He looked on this fact as suggestive ("Andeutung") of a specific action of the tissue extract of birds.

I now wish to state briefly the result of several series of experiments in which, in each case, the influence of tissue extracts of different classes of animals was tested upon the blood of a mammal, bird, reptile, amphibian, and arthropod. Only such a comparative investigation is able to demonstrate the specificity of the action of tissue extracts upon the coagulation of the blood.

1. *Experiments on the Blood of Rabbits.*—The following extracts were tested on rabbit blood: rabbit muscle, rabbit liver, cat muscle, cat liver, guinea-pig muscle, guinea-pig liver, pigeon muscle, pigeon liver, and, as a control, 0.8 per cent. sodium chlorid solution was used; the influence of the blood-clot and serum of the pigeon and guinea-pig, and of the serum of the rabbit were also tested. In each case 2 c.c. blood obtained from the carotid of a rabbit through a canula were received in 4 c.c. of the different extracts or of sodium chlorid solution containing the serum and blood-clot, or of a pure sodium chlorid solution. In five series of such experiments identical results were obtained. No marked difference between the action of the blood-clots or blood-sera used was found to exist. Among the tissue extracts, however a typical difference was present. Extracts of rabbit muscle and rabbit liver were by far the most powerful in causing coagulation of rabbit blood. All others were decidedly weaker, occasionally even less effective than a pure sodium chlorid solution. No marked difference between the extracts of the liver and of the muscle of the various species was found to exist.

2. *Experiments on the Blood of Birds.*—A large number of experiments were made with goose blood. In this case the method employed was somewhat different, inasmuch as the blood plasma was used and in most cases not extracts of tissues but solid pieces of the tissues were employed. The tissues of birds were found to be the most effective ones in causing coagulation. Among the tissues of various birds no marked difference in efficacy has been found so far. Among the tissues of other classes of animals typical differences were found to exist. The tissues of the cat and also of the dog were found to be much more active than the muscle of the guinea-pig and of the frog. The blood-clot of birds, however, was not more active than the clot of mammalian blood.†

3. *Experiments on the Blood of Turtles.*—In these experiments large turtles had to be used be-

* These investigations were carried out under a grant from the Research Fellowship Fund of McGill University.

† Biological Bulletin, Vol. IV, No. 6 (May, 1903), fully in Virchow's Archiv, Vol. 172.

‡ Montreal Medical Journal, July, 1903.

* Archiv. f. Pharmacologie u. experim. Pathologie, June, 1903.

† For further results obtained on the blood of the goose, I refer to my paper in the Montreal Medical Journal, and to the full paper which shall appear later.

cause in small turtles the blood flows out too slowly. For want of material only two experiments have been made so far. One c.c. of the blood of the turtle was collected in 2 c.c. of the extracts. Turtle liver, turtle muscle, rabbit liver, rabbit muscle, pigeon liver, pigeon muscle and 0.8 per cent. sodium chlorid solution were used. Extracts of turtle tissues were in these experiments the most active ones. In one experiment the difference between the tissues of the turtles and all other tissues was very pronounced; in the other experiment such a difference was still present though not so marked, presumably because in this latter case the blood was flowing from the animal at a much slower rate.

4. *Experiments on the Blood of Frogs.*—For these experiments bullfrogs were used. One-half c.c. of the blood was received in various test tubes containing each 1 c.c. of the extract. Extracts were prepared from guinea-pig muscle, rabbit muscle, rabbit liver, pigeon muscle, pigeon liver, frog muscle, frog liver, and as a control 0.8 per cent NaCl. solution was used. Seven experiments were made with identical results. Extracts of frog tissues were in each case by far the most active ones, all other extracts having not rarely even a somewhat inhibitory effect upon the coagulation of frog blood as compared with the action of a 0.8 per cent. sodium chlorid solution. Extracts from muscle and liver do not differ materially.

5. *Experiments on the Blood of the Lobster.*—Further experiments were made confirming and enlarging the results previously obtained. Various tissues and blood-clots of vertebrates were tested as to their influence on the coagulation of the lobster plasma. All vertebrate blood-clots and tissues were found to be without effect.

We see that the blood-clots of several species of vertebrates tested on vertebrate blood were not markedly different in their activity and did not show any specific influence upon the coagulation of the blood of their own species. With regard to the arthropods, however, the ferments contained in the various blood-clots become specific. The clot obtained from lobster-blood is active in causing coagulation of the lobster-blood. Clots obtained from vertebrate blood are ineffective, though the clot obtained from lobster-blood has a slight effect upon the coagulation of goose-blood.

These experiments prove the existence of *specific* coagulins in the tissues of all the species of animals so far tested. We may therefore speak of specific isocoagulins existing normally in the animal tissues, in so far as the coagulins are specific for the blood of the species from which they were obtained. The limits of this specificity remain yet to be determined. We saw that extracts of the tissues of rabbits, as compared with the action of guinea-pig tissue extracts, act specifically on the rabbit blood. We found, however, the tissues of the pigeon about as active as the tissues of the goose in their effect upon the coagulation of goose-blood. The methods used in these

two cases were not identical, as stated above. The specificity which has now been established does not exclude the possibility that the coagulin of one species may not also act, though less strongly, upon the blood of another species. In addition, substances exist which have a non-specific influence upon the coagulation of the blood of different species of animals, as, for instance, Witte's pepton and leech extract. Such non-specific substances exist also in the tissues of other animals, as, for instance, in the crab and, perhaps, in certain vertebrate tissues.

The coagulins therefore are analogous to certain substances which are obtained through the process of immunization, namely, the agglutinins, precipitins, and lysins. They also resemble these substances in being decidedly useful to the animal in which they are found.

Each species of animal so far tested has specifically adapted means for preventing a dangerous loss of blood. The origin of this mechanism is a problem of great interest. Even granted that those animals of each species which did not possess specific coagulins were destroyed in the struggle for existence, such a selective process does not explain the origin of these useful specific substances. We would not be satisfied if the attempt were made to cut short our investigations into the origin of the specific products of artificial immunization by the hypothesis that they were due to selective changes which took place during the processes of evolution. In the case of artificial immunization we study experimentally the changes which take place when an animal is immunized. In the case of the coagulins, we have to deal with specific substances existing naturally and not created by artificial immunization. A comparison of the specific relations existing between the fibrinogen and the tissue coagulins of each species of animals, and of the specific relations existing between a substance introduced experimentally into an animal and the new substance arising in the body of the animal suggests that also in the case of the coagulins the specificity has been acquired through a process of auto-immunization. We would have to assume that the presence of a certain fibrinogen produces a specific tissue coagulin or vice versa.

Another aspect of the specific relation between the fibrinogens and the tissue coagulins may be briefly mentioned. We have here to deal with another instance of an interdependence between apparently not connected organs and tissues—as it is for example, known to exist in the case of the thyroid and the ovaries in their relations with other tissues, or as it is also known for enterokinase and trypsin.

Is the effect of different tissues upon the coagulation of the blood due to the lymph circulating in the organs? Is the lymph the only carrier of the specific substances acting upon the blood?

The following considerations make it improbable that the lymph is the carrier of this specific substance. A careful washing out of a piece of tissue does not materially diminish the influence of

the tissue upon the coagulation of the blood. Further, the lymph obtained from the thoracic duct of the dog has approximately the same power as a blood-clot of the dog to induce the coagulation of the blood plasma of the goose. On the other hand, the muscle of a bird, even if it has been previously washed out, has an equal or usually even a greater power of causing the coagulation of the blood plasma of the goose than either the goose or dog clot.

Finally, it can be definitely proven that the influence a piece of muscle of a lobster has upon the coagulation of the blood-plasma of the lobster is caused by a substance derived from the muscle itself and not from the circulating body fluid.

PUSTULATION AND ITS ACCOMPANYING SECONDARY FEVER A COMPLICATION AND NOT AN ESSENTIAL SYMPTOM OF SMALLPOX.

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SMALLPOX.—"An acute infectious disease, characterized by an eruption, which passes through the stages of papule, vesicle, pustule and crust. The mucous membranes in contact with the air may be affected. Severe cases may be complicated with cutaneous and visceral hemorrhages." According to this definition, which is the one generally sanctioned, the pustular stage with its attending secondary fever is considered as an essential feature, and is not regarded, as I regard it, as a complication due to the infection of the essential lesion of the disease by pus organisms present in the skin. These are present more or less at all times and only require some morbid condition to excite them to action, one, which provides a suitable soil for their development and display of their pathogenic characteristics. They are lurking foes, vultures, which ever hover around the battlefield. Their number is legion or few according to the cleanliness and healthiness of the skin; an uncleanly skin is always an unhealthy skin, for it, like any other organ, rebels against any factor which interferes with its functions, and dirt will do this, producing a lowered vitality of the tissues.

Smallpox, in common with other zymotic or germ diseases, is caused by a micro-organism gaining access to the body, either by inhalation through the respiratory organs or through the skin; from its characteristic cutaneous lesions, one is led to believe that the latter is principally the organ of entrance. On account of the supposed germicidal properties of the red-blood corpuscles, it is not likely that it is by the circulation. It is doubtful if organisms ever gain access to the tissues by this agency. This particular organism has not as yet been isolated, a fact which appears rather strange, but which is in all probability due to search for it not being instituted at the proper time, which is when it is at the height of its activity and before nature has attacked it, *viz.*, in the initial stages, when it may be found

in the shotty papules, as yet unattended by an inflammatory reaction. These are the camping-grounds of the detachments of the enemy. Having gained access to the body by some channel they develop in the cutaneous tissue and mucous membrane near the surface, rarely and in only very severe cases are the more internal mucous membranes the seat of lesions caused by the germs themselves being present; cases in which nature and art being unable to cope with the foe, it has invaded other territory than that which it first planned to attack. The visceral lesions usually observed are due to toxin irritation and not to the presence of the germ itself; these toxins being carried by the blood and lymphatic vessels. The period of incubation varies from seven days at the earliest—I know of one case in which the disease manifested itself six days after exposure, the patient being on in years—to fourteen or more at the latest. Like all other organisms, vegetable or animal, it lives its little life, is begotten, takes in nourishment, elaborates it for its own use, excretes waste products, grows and begets its kind. During this period of incubation the number of organisms rapidly increases and with the increase in number there is consequently an increase in the amount of microbic excretion in the human body or host of the parasite, for such it is, as it deprives the cells of the tissue it has invaded of their lawful amount of nutriment, thus rendering them more vulnerable later on to its poisonous action. It is like the enemy that plunders the inhabitants of a district before the avenging force comes up. When such an amount has accumulated that its irritant effects are felt by the host—the harassed party has reported at headquarters and the governing body undertakes to protect them—his channels of elimination not being adequate for the draining off or removal of this matter—toxins—it poisons his system, the finer and more delicate structures feeling the effects first; the host rebels and constitutional symptoms, the first evidence of the presence of the organisms are manifested; this is the stage of invasion. In this particular disease the initial symptoms are severe frontal headache, lumbar pain, sometimes scarlatiniform or measly rashes corresponding to the areas supplied by the irritated lumbar nerves in particular; vomiting, chills and elevation of temperature. The toxins circulating in the fluids of the body in sufficient amount at last irritate the nervous system and through the sympathetic institute an inflammatory reaction. Nature ever seeks to thwart the effects of any foreign substance, animate or inanimate, by this method, in all disease the angioneurotic factor is present. The more delicate tissues are the first to suffer. It is not necessary that the micro-organisms themselves shall be present in these tissues, their toxins alone will be sufficient.

The symptoms of the stage of invasion are a warning to nature that an enemy is at work and that immediate action on her part at the camping-ground of the foe is required and this is exactly

whither she directs her forces; she sets up a severe acute inflammatory reaction around the shotty papules, for herein lies the foe. These initial symptoms are all evidences of the poisoning of the finer tissues, disturbance of the nerve centers and nervous tissue. On the third or fourth day of the disease red papules appear first on portions of the body where the skin has been more exposed to irritation and less vascular portions, and parts exposed to air especially on the forehead and at the wrists; these are also situations in which one variety of epidermis is merging into another, the more delicate cuticle of the face to that of the scalp; that of the forearm to the denser of the hand. Points of cleavage are always weak points. The lesser vascularity of such parts renders inflammatory reactions less formidable to the enemy and thus allows him more time in which to produce his poisonous weapons—toxins. Later the eruption spreads over the face and extremities and finally appears on the trunk.

That the source of entrance of the micro-organisms to the body is mainly, if not altogether, by the skin, is likely for it is the exposed portions of it that are first attacked, involvement of other portions occurring later probably from auto-infection. The severity of the disease is always proportionate to the number of lesions on the face. "If upon the face they are as thick as sand it is no advantage to have them few and far between on the rest of the body." While this statement serves to show that great face involvement denotes great severity of the case, still it must lessen the danger to have only a few on the body, for each lesion represents a collection of the foe; but if from great face involvement we naturally expect also great trunk involvement, and it does not occur the view may be taken that the foci are situated in the latter position; but that Nature is unable to attack so great a force and these foci on the trunk escaping inflammatory reaction still continue to pour forth toxins into the body, remaining shotty papules instead of becoming red inflammatory papules; inflammatory reaction having the effect of preventing this continuance of the elaboration of toxins by destroying the micro-organisms as will be explained later on.

The red papule consists in the center, of the germs which formed the shotty papule, surrounded by the products of inflammatory reaction (liquor sanguinis and leucocytes), the vessels surrounding the papule being in the state in which they are found in inflammation of a tissue. This is Nature's method of attacking the foe, she surrounds him and hems him in and sends her warriors, the leucocytes, to destroy him and also another factor, the liquor sanguinis. Each papule is a small well-defined battlefield; the center of it is occupied by the foe, which multiplies indefinitely and elaborates toxins in increasing amounts; the circumference contains the factors of Nature arrayed to cut down the enemy. Nature in her attempt to destroy the pathogenic factor does not in some distant organ of the body

produce some substance inimical to its existence; but she at once, through her angioneurotic, her nervous circulatory combination surrounds him by an area of inflammation and hems him in. All the different phases of an inflammatory reaction are gone through; dilatation of vessels, acceleration of blood stream, followed later by retardation and finally stasis; with escape of fluid and corpuscles—the red only in the most severe reactions. The vessels contain an increased number of white-blood cells for a leucocytosis has occurred to enable Nature to successfully attack the enemy and the blood-making organs have been called upon to increase their output of white corpuscles—enlargement of the spleen is often noticed as also glandular enlargement.

The first portion of the liquor sanguinis which passes from the vessels into the tissue surrounding each clump of organisms—shotty papule—is absorbed along with the toxic matter from the organisms, as lymphatic circulation is not as yet impeded; but a little later on the leucocytes in ever increasing numbers escape also from the dilated vessels into the tissue; those in the front ranks fall victims to the toxins of the micro-organisms, but others from the rear take their places. The dead bodies of the first have a function to perform (for dead as well as living they are useful); by their death their contained fibrin ferment is set free, this acts on the fibrin-forming factors contained in the liquor sanguinis and fibrin is formed, which entangles in its meshes the pathogenic organisms along with some of the blood cells—the fly is now caught in the spider's web and the enemy is entrapped and slain, for, bathed in its own toxic matter it now poisons itself.

Every animal has within its own self the means of destroying itself, retained excrementitious matter means auto-intoxication and in this case, it also retains its toxins and lies entangled in a clot containing them. It is a Black Hole of Calcutta. This clot is the area of coagulation necrosis noticed on the section of a papule. It is creamy white or greenish yellow in color from not containing colored corpuscles. During this inflammatory reaction many leucocytes are forced into the deeper layers of the skin, the papillæ of the cutis vera, from which they later on pass outward and taking on the characteristics of the cells of the cuticle repair the destroyed skin; for the organisms in the heyday of their power caused the death of many cells by depriving them of their normal amount of nutriment and also by their toxic action on them. The destruction so far in the disease is not so marked as what may result from the effects of the secondary infection by pus organisms. Nature having performed the great master-stroke in slaying the micro-organisms, now that they are dead in her hands gradually lessens the reactive inflammatory action and the escape of leucocytes and fluid is restricted. What fluid does escape is prevented from being carried off at first by the lymphatics by pressure from the exudate on these vessels; this fluid no longer be-

ing necessary for the formation of a clot collects in the intercellular spaces of the tissue forming the outer zone of the papule; the coagulum contracts and the serum being squeezed out of this by the contraction, also increases the amount of clear fluid and thus form the vesicle—the vesicular stage. The coagulated area in the center of the papule prevents the fluid from distending it in the center, hence the umbilicated or depressed vesicle, for the fluid is forced to expand the periphery alone. If fluid were injected into the tissues surrounding the abdominal umbilicus it would distend the former but not the cicatrix; this is on the same principle—for what is a scar but organized fibrin?

With the appearance of the characteristic eruption in its first phase, red papules, the temperature falls and the patient becomes comfortable from a cessation of the other initial symptoms also, and if no complication, such as pustulation, arose the duration of the disease would be short. The irritation from toxins being removed (for with the destruction of the organisms this source of irritation has been removed), the circulation resumes its normal state; pressure from inflammatory reaction being removed the lymphatics again assume their function and the serum in the vesicles is absorbed. "Cases in which hemorrhage occurs into the vesicles at once dry up," showing that depletion of the inflammatory area hastens absorption of fluid by renewal of pressure.

In chickenpox the vesicle is not umbilicated, because in this case, due to the lesser virulence of the toxins, the circulatory disturbance is less—fewer leucocytes escape and a coagulum is not formed in the center of the papule.

Unfortunately, instead of vesiculation being the final cutaneous lesion in smallpox there is a subsequent one,—pustulation, this being, in my opinion, the result of a secondary infection by pus organisms, which are ever present in the skin. Most probably those present at the time of the entrance of the smallpox organism would perish from the toxins excreted by the latter, for if they did not we should have evidence of pustulation earlier than we do; but on the cessation of the excretion of the toxins of the smallpox germs by the death of the latter, these pyogenic organisms will find the vesicular fluid a suitable medium in which to flourish; it is not a highly toxic fluid because the toxins have been taken up by the organisms themselves and lie inert in their dead bodies, toxalbumins. This vesicular serum soon becomes turbid from the rapid development of these pus germs and the vesicle becomes a pustule, the coagulated area is broken down and the pustule assumes a globular shape, thus differing from the umbilicated vesicle. From the toxins excreted by these organisms and probably from the liberation of toxic matter from the decomposed coagulum a secondary systemic irritation results with a rise of temperature and a second inflammatory reaction around the foci of infection. These later foes must be dealt with in the same manner as the first. The temperature again falls when the foe

is overcome and convalescence is now entered upon. It was stated before that when hemorrhage occurs into the vesicles, they dry up and the disease is aborted. This is due no doubt to the germicidal action of the red cells of the blood on the pyogenic organisms in the vesicular serum. The extent of scarring or pitting depends on the extent of the pyogenic mischief; if it is extensive the leucocytes stored up in the papillæ of the skin for reconstructive purposes are destroyed and new cells are not forthcoming to replace the old which have perished.

It is said by the highest authorities that the disease is infectious throughout its whole course, that the contagium exists in the secretions and excretions and in the exhalations from the lungs and skin, the dried scales of the latter constituting by far the most important element. There is a doubt in some minds as to whether the disease is infectious before the eruption develops and in the mind of the laity it is supposed not to be contagious until the stage of pustulation and scabbing is reached. I believe that the disease is infectious in its earliest stages, when the germs are developing in the skin—shotty stage—and throughout the course of the disease. Germs work their way from the camping-ground into surrounding tissue and pass to the surface as the lesions are situated in the skin and mucous membranes near the surface, here they are given off in excretions and secretions passing from these parts and are also thrown off in the scales of epidermis and epithelium which are normally shed; this shedding at the termination of the disease will be more abundant but it is, however, going on all the time. The germs contained in these may not be in an active state, but once taken into a new host they quickly take on active properties and cause the disease. In an epidemic at present prevalent those exposed presented the symptoms just fourteen days after; they must have taken in the germs while the first patient was in the earliest stages of the disease for he was at once removed.

I do not consider the well-developed red papule, vesicle and pustule particularly infectious, but rather the surrounding skin which contains dormant germs; for in the other cases the germs have been attacked by Nature. The epidermis being a non-vascular structure deriving its supply of nutriment from the vessels of the underlying cutis vera, will not be engaged in the active inflammatory reaction. It suffers from its supply of nutriment being curtailed on account of circulatory disturbance and is more abundantly and rapidly shed with its dormant micro-organisms. The pustules are contagious by reason of their pyogenic cocci, not from their smallpox germs, unless a few may have survived.

The cure of germ disease depends on the destruction of the organisms by their own excretions; this is Nature's method and if unaided she cannot accomplish it, art must be called in to assist her; but to be successful it must be by a means analogous to Nature's plan. In serum

therapy we have this. The nearer we approach to the understanding of her methods, the simpler will be our treatment and the less empiric drug-giving will there be. If, in smallpox for example, organisms enter a host; the skin being the point of attack, they multiply, but there is as yet no inconvenience suffered by the surrounding tissues, save that the germs deprive the cells of their normal amount of nutriment and thus render them, later, more vulnerable. While at first, on account of their as yet small numbers the micro-organisms have not excreted more toxic matter than can be drained from the system by the organs of elimination, the host has not suffered; but if his organs are at the time in a dilapidated condition elimination will not be so thoroughly carried out and systemic poisoning will be the sooner established with its initial symptoms and succeeding inflammatory reaction; but if they are acting normally the stage of systemic invasion will be later in appearing. At last, due to the rapid increase of germs and, therefore, the enormous increase of toxic matter, even these so far healthy organs cannot adequately remove it and systemic poisoning occurs.

Since the introduction of the so-called anti-toxin treatment of diphtheria much has been written concerning a substance being formed in the body during disease, which neutralizes the effects of the toxins and renders them harmless. This has led bio-chemists far afield and has opened up glorious fields for research; but is this the case? I do not believe that the so-called antidotal substances are formed. All animals excrete substances which if they are retained within the body, or if re-admitted will cause their own death; but no antitoxic substance is formed to neutralize them. Why, then, in the case of disease from the toxins of micro-organisms? Such a theory will not stand the test of future research. The serum injected in diphtheria is the serum of the blood containing the toxins of the diphtheria micro-organism. By its injection Nature is anticipated and a systemic poisoning is hastened, whereby the inflammatory reaction is brought into play and the organisms so much earlier attacked. Constitutional symptoms are accelerated and intensified but the cure is brought about so much earlier than if Nature is unaided. This is the curative effect of the injection of a toxin serum. There is also the protective effect; one attack usually confers immunity to this disease on the person for some time, if not for life, and so does the introduction of the serum prevent the exposed from contracting the disease; here the enemy on gaining access to the body is at once dealt with; Nature is prepared for him. It is much better to deal a decisive blow at the foe early in the disease, for then the system is in a better condition to react; the toxemia from increased waste products and the semi-starvation have not as yet been felt by the body; prolonged action weakens the resisting forces. In many diseases, as yet, instead of serum treatment being used germicidal drugs are had recourse to; aiming at destruction of the foe with carbolic acid, mercury and others,

and, as I have shown in an article on the "Action of Ferric Chloride in Erysipelas and Allied Conditions," in the *Medical Record*, aim at hemming in a foci of infection, thus imitating Nature's method. The treatment of smallpox and all other germ-caused diseases should be by means of toxin serums. It may be asked why introduce a substance similar to that which is causing such severe constitutional symptoms; but in this lies the cure, severe constitutional symptoms evidence on the part of Nature the ability to react. Cases of smallpox with most marked initial symptoms are usually the ones of shortest duration and less severe future course. Ambulatory attacks of typhoid fever are often fatal.

Vaccination.—The inoculating of man with the virus of an eruptive disease of the cow; a local pock with constitutional disturbances is produced and protection from smallpox, more or less permanent, is obtained.

Cowpox, if not the same disease in the cow as smallpox in man, is very similar. In the cow it goes through the same initial symptoms; papular, vesicular, pustular and scabbing stages. It is during the vesicular stage that the vaccine is removed for vaccination purposes. Now, what is present in an umbilicated vesicle at this time? An area of coagulation necrosis—clot—and serum containing pus organisms, which have entered from the surrounding unaffected skin and are rapidly multiplying; the area of coagulation necrosis contains fibrin; broken down leucocytes, free toxin; toxalbumins formed by the action of the toxins on the germs and some germs, which may have not been destroyed and are lying quiescent, ready on removal to set up a new infection. In vaccination, what do we use, the serum of the vesicle which is multiplying pyogenic organisms or the clot or pulp? The best firms who prepare vaccine tell us that they prepare it from the pulp. If this is so we are inoculating the person with the free toxins, undestroyed cowpox micro-organisms and toxalbumins from which the toxic element may be liberated. In this aseptically prepared vaccine constitutional symptoms and local pock do not appear until seven or eight days after inoculation, but in the varieties of vaccine which contain both the serum of the vesicle and pulp—the older kinds—constitutional symptoms and the local pock appear as early as the second or third day and the disturbance is more marked. No doubt the presence of pyogenic cocci in the serum is responsible for this; pyogenic organisms have a short incubation stage and, already having multiplied in the serum, they are fitted for action, the first constitutional disturbance is no doubt due to them and this is quickly followed up by that of the cowpox germs. In vaccination as well as in smallpox the stage of pustulation is a complication. In the aseptically prepared vaccine carefully inoculated into a clean scarified area with the skin surrounding it kept clean pustulation should not occur. What are we doing by this vaccination process? Merely from a small laboratory in the human body elaborating sufficient toxin to

render the person vaccinated immune to smallpox. Immunity depends on the presence in the body of an agent harmful to the germ causing the disease. The same effect is produced by injecting as a safeguard against other diseases, serums obtained from animals susceptible to such diseases and injecting these serums, which contain toxins into the human body; cholera, typhoid, diphtheria, and so on; why not do the same in smallpox? Jenner's great discovery has been a boon of untold good to humanity; but with all due regard to the great discoverer, it is only a half method and in this day of toxin serumtherapy it ought to be relegated to its proper place of what has been best, but which is not now best. With the introduction of a toxic serum as a protective agent many complicatory symptoms and disturbances would be done away with and in the case of exposure to the disease the protective action would be more rapid. It certainly is the protective and curative treatment of the future. This serum would have to be taken from the cow, as the diphtheria toxic serum is taken from the horse. The period of invasion or initial symptoms would be the time, when the blood is saturated with toxins, veins in the vicinity of the part affected the udder, would probably yield the greatest amount. The author will feel grateful to any one, who will take up the subject, where she has been compelled for the present to stop, and who will carry it through.

Do the toxins of other diseases than the one in question exert an immunizing effect on the person who has been the subject of their ravages? I fancy so, although the protection may not be so lasting. In an epidemic of smallpox, which occurred in the Toronto General Hospital patients suffering from typhoid fever showed marked immunity, some years ago under an incorrect diagnosis, a case was admitted to our own hospital; there was only one other patient in the ward at the time, he was suffering from purpura hemorrhagica and could not be vaccinated; but although exposed for some time to smallpox, he escaped infection. Later on, some weeks in fact, he carried the infection to all the people he visited. In a slight epidemic, from which we are now emerging, all the members of one family save the father and a girl of eight or nine years of age have been attacked. This child had an attack of scarlatina followed by severe inflammatory rheumatism eight months previous. By Dr. Graw, of Buffalo, it was observed that vaccination lessened the severity of an attack of influenza.

Treatment.—In conclusion, a word as to the treatment of smallpox, and the prevention of pustulation will not be out of place: (1) Injection of a toxic serum obtained from a cow suffering from the initial symptoms of cowpox. This toxin serum should be injected in the stage of invasion, as soon as symptoms have been observed; (2) cleanliness and disinfection of the skin, to prevent an accumulation of pyogenic organisms and the internal administration of calcium sulphide to prevent pustulation, as in furunculosis;

(3) opening of all vesicles, thereby removing the vesicular fluid, which is such a medium for the growth of the pyogenic organisms and the painting of each opened vesicle with aseptic collodion. The prevention of pustulation will abolish pitting, for in the early stages of the disease the cutaneous involvement does not extend into the cutis vera; (4) treat symptoms as they arise.

Smallpox is an acute infectious disease, caused by a special micro-organism not yet isolated, passing through a stage of incubation during which there are no symptoms, followed by a stage of invasion with initial symptoms in which the shotty papules may be detected, followed by the red papular and vesicular stages.

MEDICAL PROGRESS.

MEDICINE.

Antistreptococcus Serum.—The present status of this subject has been thoroughly investigated both clinically and experimentally by MENZER (Münch. med. Woch., June 30, 1903). Over 100 cases were under observation and the author's main point was to determine the indications and contra-indications for the use of the serum. The value of this remedy has lately been largely overrated and a warning is extended against its indiscriminate employment. The serum as shown by animal experimentation, is effective by stimulating phagocytosis, and the organism itself therefore assumes an important rôle in the fight against the streptococci. When this function is no longer possible, the administration of the serum is of no value. In addition to the destruction of the pathogenic organisms, the body is also compelled to get rid of the dead bacteria and the cells. In those cases where there are walled off collections of pus, the use of the serum is contra-indicated, unless surgical interference is also practised, as the serum increases the resorption of the toxic purulent products. The serum gives the best results in acute cases, if given in large doses. In chronic mixed infections it should only be given if the condition of the patient, and particularly the lungs, make it probable that the organism is still able to attack the chronically inflamed foci of inflammation. The serum should be given in small and gradually increasing doses. Only those sera are effective which are freshly prepared from streptococci of human origin. Standardizing the serum by animal experimentation has thus far afforded no means of judging the degree of curative power in the human subject, and for the present the effect on the individual is the only measure of its action.

A New Method of Hemo-Alkalimetry.—Most of the methods for the purpose of determining the concentration of alkali in the blood depend on the reaction with some chemical indicator and require for their application a volume of blood only procurable by the scalpel or the cupping glass. The results in such cases are only approximate and do not determine delicate variations. A new method for determining the neutralization of the blood at an exact and definite point, which is free from the inaccuracies of test papers and does not react solely to certain of the complex ingredients of the plasma, but shows the point of neutralization of the whole blood, is presented by ARTHUR DARE (Bull. Johns Hopkins Hosp., July, 1903). Blood, when examined with the spectroscope, gives the characteristic spectrum of oxyhemoglobin, unless changed by the absorption of certain gases or the introduction of sub-

stances that modify the composition or functional conditions of the plasma. As the blood is diluted and examined in a stratum of a certain thickness, the absorption bands of oxyhemoglobin are observed to fade away, but are made to reappear when this stratum thickness is increased. When, however, blood is triturated with an acid reagent, the spectrum of oxyhemoglobin disappears and cannot be restored by the addition of an alkali or by increasing the stratum to the maximum, which is capable of illumination for examination spectroscopically, hence the spectrum of oxyhemoglobin may be removed by dilution or by neutralization, in the latter case the hemoglobin is changed and its characteristic spectrum is destroyed permanently, while in the former it can be made to reappear by increasing the concentration of the hemoglobin. The new method is based on this observation. The basic material is neutralized by a solution of tartaric acid, gm. .075, to distilled water, c.c. .200. The special instrument devised by the author for this test consists of a capillary blood-tube and a reagent pipette. The latter contains the acid reagent. The lower end of the blood-tube is then examined with the spectroscope, and if the bands of oxyhemoglobin are present, the acid is added carefully drop by drop, and when the bands suddenly disappear, the observation is at an end. It is then only necessary to read the result from the scale on the test tube, which is graduated in cubic centimeters and the equivalents expressed in milligrams of sodium hydrate to 100 c.c. of blood. The author has devised a special scale of equivalents, in mgs. of sodium hydrate to 100 c.c. of blood. There is a more or less constant relation of the alkalinity of the blood to the color index, and the author has attempted to make this the basis of comparison. For this purpose some 75 cases were examined. In enteric fever a marked decrease in alkalinity is the rule. This is also true in tuberculous disease with glandular involvements, while with tuberculous meningitis or peritonitis the alkalinity shows an increase or falls late in the course of the disease. In gastric ulcer there is a fall in the alkalinity below the color index, while gastric cancer shows an alkalinity above the color index. The anemias all exhibited a decided fall in alkalinity, while observations in chlorotic subjects showed the alkalinity to follow closely the normal color index. The administration of excessive amounts of sodium bicarbonate had no effects on the hemoglobin tests. In splenomedullary leucemia the alkalinity suffers a marked decrease, while in splenic anemia and cholemia it shows a rise. Catarrhal jaundice and amyloid liver both raise the alkalinity of the blood; cholelithiasis presents an evident decrease. Croupous pneumonia, phthisis, influenza, acute appendicitis, even in the presence of a frank leucocytosis, showed an increased alkalinity, while investigations upon malarious subjects appear contradictory. The relation that the alkalinity bears to the excretion of urea still needs investigation. These studies tend to show that in those diseases which present a marked decrease in the alkalinity, they at the same time exhibit a marked increase in the quantity of urea eliminated.

Obliteration of the Superior Vena Cava.—While signs of compression of the superior vena cava are not very uncommon in cases of aneurism of the aorta and in mediastinal tumors, instances of complete obliteration of the vessel, with the establishment of a collateral circulation, are extremely rare. W. OSLER (Bull. Johns Hopkins Hosp., July, 1903), reports one case under his observation for three years, long enough to make a diagnosis of fibroid obliteration by exclusion, and a second in which the obliteration was due to compression in Hodgkin's disease. Of the 29 cases reported in the literature, thrombosis due to disease within the

vein was found in 10. The others were due to lesions outside the vein—tuberculosis, mediastinitis, aneurism, syphilis, periaortitis, carcinoma and fibroma. The symptoms of the condition depend entirely upon the degree to which compensatory circulation has been established. Obliteration of any one of the three great veins of the body may exist for many years with even good health and a completely effected collateral circulation. The clinical summary of the first patient, a young negro, was as follows: Hard work, alcohol and exposure; dyspnea, swelling of the neck and face; gradual distention of the superficial thoracic and epigastric veins; improvement for a time; gradual increase in the size of the superficial veins; the finding of tubercle bacilli; finally, fever, delirium and unconsciousness. The autopsy showed a tuberculous caries of the spine, fibrous mediastinitis with obliteration of the superior vena cava and innominate veins, and a tuberculous meningitis. In the second case there was present a Hodgkin's disease, with compression of the superior vena cava and the formation of an extensive collateral circulation. The disease ran an unusually chronic course and was also marked by the extreme distention of the superficial veins of the thorax and abdomen. There were occasional periods of improvement from the administration of Fowler's solution. At autopsy it was found that the superior cava was completely obliterated by the enlarged mediastinal glands.

Malarial Cough.—Attention is again called to the occurrence of cough of malarial origin, by V. PIAZZA-MARTINI (Gazz. Siciliana di Med. e Chir., June 4, 1903), who describes three cases which came under his observation in which there was a persistent cough, resisting all ordinary remedies and coming on in paroxysms at about the same hour each evening. In none of these cases was there a malarial history; but the periodicity of the paroxysms, presence of enlarged spleen in two of the patients and absence of other cause, suggested the possibility of malaria in the etiology of the affection. That this diagnosis was correct seems to be proven by the prompt subsidence of the cough after a few days' administration of quinine. The author quotes Sverjvsky's article on malarial cough in which he states that it has all the characteristics of nervous cough and that it may precede or follow the febrile phase of malaria or constitute the sole evidence of malarial cachexia. The latter writer holds that the respiratory condition is not produced by the local action of the malarial toxins upon the mucous membrane, but rather by the effect of the disease upon the general nervous system and especially the sympathetic.

SURGERY.

Two Fatal Cases of Partial Thyroidectomy.—In Egypt goiter is a very common condition, and the operation of hemisection is very frequently done. FRANK C. MADDEN reports (Lancet, June 20, 1903) from the Kasr-El-Aini Hospital, Cairo, two deaths which arose apparently from diametrically opposite conditions. In one, a girl of twelve years, the goiter was tri-lobed. No trouble was experienced in shelling it out but a mass near the isthmus, the size of a walnut, was left. Two days later she had a severe attack of dyspnea from laryngeal spasm. Twelve hours later the hands and feet showed marked signs of tetany and gr. v. of thyroid were given twice a day. This was continued a week, and when all symptoms of tetany had disappeared maltine was substituted for it. Two days later the tetany reappeared and was not checked by renewed administration of thyroid. Finally, twenty-four days after operation she died of tetany of the respiratory muscles. The second case was an antithesis of the first in that death resulted from hyper- rather than hypo-

thyroidization. The wound was packed tightly, but as the patient showed marked restlessness immediately on coming out of the anesthetic, this was removed and the part irrigated with salt solution. Pulse was at this time 144, respirations 52 and temperature 102° F. He was infused with hot salt solution, 1½ litres, all to no purpose. He died twenty-eight hours after operation. It seems to the author probable that, had he pushed the thyroid in the first case he would have saved the first case, but it is interesting to note that the tetany was not controlled by thyroid when it was exhibited the second time.

Tetanus Prophylaxis.—The value of tetanus antitoxin as a prophylactic is shown in a series of observations made by J. McFARLAND (Jour. Am. Med. Ass'n, July 4, 1903) in some 800 horses used for immunizing experiments, in manufacturing different sera, and which were constantly being injected and bled at frequent intervals, and occasionally suffered from local lesions consequent upon the irritative actions of the injected toxins. During this period of four years there was a death-rate from tetanus in spite of all precautions, which at times reached 10 per cent. A systematic immunization was then begun with antitetanic serum, 10 to 25 c.c. of a low grade being injected every three months. The death-rate rapidly decreased and in the second year was reduced to less than one per cent. The practical conclusions to be drawn from these observations may also be applied to the human subject, and the author believes that in all suspicious wounds, which are likely to be followed by tetanus, the antitoxin should be given as a prophylactic measure. The only objections are the cost, poor keeping qualities of the serum, and the method of administration by subcutaneous injection. The latter may be obviated by dusting dry serum on the wound surface, as already advocated by a French observer. Experiments made on guinea pigs by the author, demonstrated that the dried serum fully protected inoculated animals. The advantages of the latter method are that the dry serum preserves its activity indefinitely, requires no instrumental administration, but can be sprinkled from the bottle in which it is dispensed directly on the cleansed wound. It is non-irritating, and neutralizes the toxin in the wound and, being absorbed, also neutralizes the toxin which has been taken up by the patient's blood. The more universal use of the dried serum is strongly urged in all suspicious cases.

Treatment of Anthrax with Intravenous Injections of Collargolum.—The introduction into the system of derivatives from metallic silver is attracting very great attention. DR. ROMAN VON BARACZ (Archiv f. klin. Chir., Vol. 70, No. 2, June, 1903) details the interesting history of three cases of anthrax, which to all appearance were very greatly benefited by this new drug. Large doses, viz., up to cm. xxx were used, since the author had found it to be harmless to dogs even in doses proportionately greater. One thing of some import, to be gathered from his report, is that a severe chill invariably followed the injections, but that this was the exception, if the very newest form of the drug was used. The local treatment of the pustule consisted simply in the application of wet aluminum acetate, so that no one could assume the recovery of the patient and rapid sloughing of the pustule to be due to anything but the collargolum. The author has used this form of treatment in typhoid fever with very good results.

OBSTETRICS AND GYNECOLOGY.

Why Minor Gynecological Operations Fail of Effect.—We may accept as an established axiom that the majority of genital ailments are due either to trauma during accouchement, or specific infection, and

that the ultimate results of such accident or infection, i.e., diseases of the uterine adnexa, are not to be relieved by surgical or medical treatment of the original lesion says S. GOLDBERG (Buffalo Med. Jour., July, 1903). For example: Given an injury of the cervix during labor, which is not repaired at the time of injury or in six months or a year following, an endometritis due to eversion of the contiguous mucous membrane naturally follows, and as there is no structural barrier to limit the process, adnexal involvement ensues. Next, from the constant irritation and increased weight of the uterus, retroversion or flexion occur; these being in the author's opinion the most frequent complications of adnexial disease. In his belief, it is the height of folly to repair the cervix and fasten the uterus by the Alexander method or any modification of it, as it is morally certain that after a year the seeds of disease are sown in the tubes and ovaries and the symptoms, such as pain, metrorrhagia, sacralgia and more or less permanent invalidism are really due to adnexial involvement. Therefore, it is the part of wisdom and safety to open the abdomen, examine the adnexa and treat them radically or conservatively; as in the majority of cases the most of the trouble will be found there. He limits the Alexander operation to acute retroversion of recent standing and holds that all so-called minor gynecological operations, to be of any permanent benefit, must be performed within one year from the time of infliction of the original lesion, and that after a year, Alexander's operation, trachelorrhaphy or curettage or all combined, will be insufficient to restore the patient to health; for the reason that in the majority of cases the adnexa are involved by that time.

Objections to Vaginal Route in the Treatment of Ectopic Gestation.—The treatment of this condition has gone through an evolution from a stage of inaction to one of prompt surgical action, passing an immediate one of electrical application. At the present time, J. W. BOVÉE (Amer. Jour. of Obstet., June, 1903) believes that no physician would fail to recommend surgical treatment, once the diagnosis is made. Failure of diagnosis is due to faulty, early teaching. Symptoms of slight rupture of a pregnant tube may occur particularly in the early stages, at a time when menstruation is expected, or even earlier. The same is true of tubal abortion. In both conditions there may be no evidence of shock, but when it does occur it is typical. Pain and collapse are usually less than are said to be present. Any inflammatory condition of the pelvic peritoneum, tubes or ovaries, may give as much pain, and because of its slight degree, these cases are often mistaken for uterine abortion. Severe internal hemorrhage is not so liable in early rupture as abortion of a pregnant tube in the early stages, as it is then more apt to be slow and may be but slight. The expulsion of a decidua at this time may be overlooked. The author's reasons for preferring the abdominal route in operating on these cases are: (1) The field of hemorrhage can be more quickly reached, taking into consideration the relative amount of time consumed in cleansing the two routes under anesthesia. (2) The condition can be more readily treated and the ligation of blood vessels more readily and certainly performed. (3) The danger from secondary hemorrhage in ectopic pregnancy is markedly less when the blood vessels are ligated than when the removal of the clots alone is practised. (4) Any other important pathological lesion requiring attention may, in suitable cases, be attended to in the same sitting. The shock, as a rule, will be less than when the vaginal and abdominal incisions are both made. (5) The tube can be more readily removed than by the vaginal route. (6) The abdominal route is applicable to all stages of

pregnancy which is not true for the vaginal route in the latter months. (8) The vaginal incision has no place in the treatment of an unruptured pregnancy, while the abdominal incision is the route par excellence.

Better Care of Women after Labor.—During the lying-in period, if one is fortunate enough to escape infection, the much stretched, contused and lacerated parturient tract is, says Wm. M. SPRIGGE (*Am. Jour. of Obstet.*, June, 1903), given no further attention. Somewhere between the seventh and twelfth days, if the patient complains of no special discomfort, she is allowed to get up. The getting-up period is not, as a rule, determined by a careful examination of the pelvic organs, but is dependent upon the absence of subjective symptoms, the progress of involution having never been accurately determined. It is difficult to understand why one part of the parturient tract should be repaired and other lacerations left to shift for themselves, yet much of the practice of to-day is along this line. Nor is it necessary to repair these lacerations within twenty-four hours after labor; some of the lacerations cannot be best repaired at this time, but after twenty-four or forty-eight hours when the edema in the parts has subsided, they can all be repaired and made to heal by primary union. Any lacerations in which large blood-vessels have been torn should be repaired at once. The primary union of the perineum will take place if it be repaired some time after labor. Many of the vaginal lacerations are submucous and cannot be so well detected immediately after labor; these, if neglected, often result in the most severe cases of cystocele and rectocele. They are not hard to repair. The writer agrees with Hirst that it is best to repair the cervix forty-eight hours after labor, and that every woman should be subjected to three examinations after labor, viz.: The first within forty-eight hours to detect the injuries of childbirth. The second, before she leaves her room, to determine the position of the uterus. The third at the end of the puerperium, six weeks after labor, to observe the condition of all the pelvic organs and structures of the abdominal wall, the coccyx, and the position of the kidneys. The author has made it a practice to examine the patient for the second time before she leaves her bed. There is less danger, it would seem, of pelvic inflammation, of puerperal infection by consistently repairing all lacerations of the cervix and vaginal tract, when done by surgically clean hands, than by leaving these conditions to take care of themselves, especially as parturient women are even more liable to infection through vaginal lacerations than by way of the endometrium.

GENITO-URINARY AND SKIN DISEASES.

Localized Ichthyosis.—The patient was a soldier, twenty-one years of age, who, as far as he can remember, always suffered from a symmetrical disposed eruption of a scaly appearance. Anamnesis otherwise, as well as family history good. The skin under the axillæ, in the substernal regions, around the umbilicus, on the buttocks, and on the groins, is covered with an eruption in the form of symmetrically disposed, distinct spots, covered with grayish-white scales that cannot be removed mechanically, and that feel rough to the touch; the spots are of variable size. The axillary spaces are partially covered with a thick stratum of scales, and the same to a greater or lesser extent is seen in the other above-mentioned localities. Examination of the nervous system developed nothing abnormal outside of a moderate dermatographism. The clinical feature of the case, according to ZNAMENSKY (*Roussky Vrach*, No. 22, 1903), lies in the localization of the

eruption, which is usually described as affecting the entire body, also in the remarkable symmetry of disposition of the spots on either half of the body. Treatment proved quite unavailable, so much so that the patient as one suffering from an incurable affection was dismissed from military service.

NEUROLOGY.

Relation of Neuralgic Headaches to Storms.—A unique research in connection with this subject has been made by S. WEA MITCHELL (*Am. Med.*, June 27, 1903), who presents some very interesting observations in this little understood field. The originating causes of hemicrania are as yet unknown. He asserts that eye-strains are rarely the primary trouble, but they may add to the number and exaggerate the force of the attacks. Fatigue, worry, etc., have a certain influence, and atmospheric conditions have a potent share. He has observed this in a number of instances and reports in detail the history of one case, in which a record of the attacks was kept for seven years. The pain curve was seen to follow the storm curve for that period. Electric storms were not among those which exerted any influence. March and April were the worst months and October and February the best. Nothing definite can, of course, be based upon these data and the author suggests that further observations be made by recording the dates of attacks in afflicted individuals for a period of two years and comparing them with the storm curve for the locality for the same time.

HISTOLOGY, PATHOLOGY, BACTERIOLOGY.

Cysts of the Peritoneum Covering the Fallopian Tubes.—The frequency with which these small cysts are met with must be familiar to all those who work in gynecology and pathology, remarks T. G. DICKSON (*Am. Jour. of Obstet.*, June, 1903). They are practically always con-comitant with neoplasms of the generative organs, or the more serious inflammatory diseases of the tubes. They seem to be found most frequently with myomata of the uterus, and salpingitis. Because of their benignity and small size, they are incapable of producing clinical symptoms. As regards their naked-eye appearances, these cysts are occasionally single; more often, however, they are multiple. They vary in size from those which are not visible to the unaided eye to those which are four or more millimeters in diameter. Their location is most often on the anterior and upper surface of the tube. Still they are not infrequently found in other locations. The peritoneum covering the ampulla of the tube contains them most frequently. They are spherical or lenticular in shape, containing a clear or opalescent fluid, and, in tubes without marked perisalpingitis, can be moved freely over the musculature with the peritoneum. They are variously considered as springing from congenital anlage, derived from existing lymphatics, or due to peritoneal inclusions. The author considers that with the character of the cell-lining, such as they have, they come from three sources, namely, the mesothelium in the peritoneum, the endothelium of a blood-vessel, or the endothelium lining lymph-spaces. An origin from blood-vessels seems unlikely, because of the absence of blood in the cysts, and also on account of the absence of elastic tissue in the cyst wall. In the writer's opinion they are dilated lymph-spaces, and are associated with those diseases of the tube and neoplasms of the generative organs which are capable of interfering with the free circulation of the lymph in the tubal peritoneum.

THERAPEUTICS.

Action of Somnoform.—This is the commercial name of a new anesthetic containing ethyl chloride 65 per cent., methyl chloride 30 per cent., ethyl bromide 5 per cent. It has been very largely used in France for producing anesthesia for minor operations. SYDNEY W. COLE (Brit. Med. Jour., June 20, 1903) reports a series of exhaustive experiments, made at the physiological laboratory, Cambridge, from which he deduces the following conclusions: (1) The chief danger attending the use of this mixture is that it may paralyze respiration. Most careful watch, therefore, must be kept. (2) Owing to the depression or paralysis of the peripheral endings of the cardio-inhibitory fibers and the comparative slight action on the heart itself there is no danger of heart failure, provided respiration has not yet ceased. (3) After cessation of the respiratory movements it is easy to restore the animal by artificial respiration. The author thinks that the paralysis of the cardio-inhibitory fibers by ethyl bromide renders that drug a very valuable anesthetic. Embley has shown that the sudden deaths which sometimes occur during chloroform narcosis are due to inhibition of the heart by stimulation of the cardio-inhibitory center. This is usually seen only in the early stages of chloroform administration; the danger passing off when the medullary centers are exhausted. This suggests the advisability of combining ethyl bromide with chloroform. If in anesthesia produced by ethyl bromide the vagi are paralyzed, chloroform would then be deprived of one of its greatest dangers. It might be possible to get past the stage of excitement with the bromide and, after reaching medullary depression, to maintain anesthesia by chloroform alone, the bromide being stopped because of its depressing effects on respiration.

The Further Use of Bacterial Vaccines.—It will not be so very long before the surgeon, who, after all, is a sort of executive slave to the internist, is put on the shelf altogether. A. E. WRIGHT (Brit. Med. Jour., May 9, 1903) looks forward most hopefully to the time when vaccines shall be so perfected as to immunize human beings against the colon bacillus, to say nothing of the staphylo- and streptococcus. Without the ravages of these groups, the surgeon's hand would indeed be stayed. The high standing of the author, as well as the prominence given his paper by the *British Medical Journal*, is warrant for a close observation of his suggestions and conclusions. He says "The colon bacillus, even if we consider it quite apart from its near congeners, the dysentery bacillus, the Gaertner bacillus and the typhoid bacillus, all of which, like the colon bacillus, affect the lower part of the gut. The rôle they play in internal surgery is kin to that of the staphylococcus externally. The gravity of the local process is infinitely graver, first, because of the importance of the organs involved; secondly, from the impossibility of applying antiseptics safely, and thirdly, from the very grave nature of the surgical measures which must be necessary in the event of serious infection." Cholelithiasis is, no doubt, the most important—always excepting appendicitis—of the ills directly attributable to the colon bacillus. Cystitis, meningitis, endometritis, mastoiditis and arthritis are all considered in turn. It is seen that while the results are not by any means brilliant there is enough of encouragement to keep interest in this matter of prophylactic medicine at a high pitch. Progress can only be made if the existence of the negative and positive phase is noted and an effort made to find more exact data upon which to base a recognition of a higher base line of

immunity. Until this effort is successful the vaccines cannot be constantly brought to their highest point of efficiency.

Practical Experiments in the Treatment of Anemic Conditions.—A series of practical tests have been made with the ferruginous preparation known as Pepto-mangan (Gude) in other conditions beside chlorosis and anemia, for which it has been particularly recommended. In all diseases attended with weakness and exhaustion, F. EULER ROLLE (Wiener klin. Rundschau, March 29, 1903) found that it caused marked improvement and also maintained to some extent the nutrition of the patient, by reason of the peptone which it contains. One series of cases included tabes with gastric crises, vomiting of pregnancy, cancer of the esophagus, diabetes mellitus, arthritis and uric acid diathesis, and leucemia. In all of these cases the improvement could be demonstrated clinically by determinations of the body-weight, by the condition of the gastro-intestinal tract, and by microscopical examination of the blood. It is known that most ferruginous preparations on the market consist of albuminous material held in solution by an excessive amount of caustic soda, thus neutralizing the gastric juice, or through their decomposition the irritating chloride of iron is produced. Others represent peptone combinations containing an excessive amount of mineral acids and, therefore, are precipitated by the alkaline intestinal secretions and rendered less assimilable. Pepto-mangan does not seem to share these disadvantages and owing to the presence of manganese, is an excellent carrier of oxygen. No unpleasant after-effects have ever been observed.

The Use of Arsenic in Chorea.—The value of arsenic in chorea of the infectious or rheumatic type is questioned by H. ROEDER (Fortsch. d. Med., July 1, 1903). He made some very careful clinical observations in a number of children who received arsenic in the form of arsenical mineral waters or Fowler's solution, in increasing dosage up to 12 drops t.i.d. In most of the cases there was found after the twelfth day, a sudden or a gradual rise of temperature and an accelerated pulse. There was also noted systolic murmurs over the apex, stenocardia or arrhythmia, and increase in the area of cardiac dullness. The subjective symptoms also grew worse and there was apt to be a recurrence of the previous rheumatic conditions. Digestive disturbances resembling the typhoid state were often present. In most cases, as soon as the drug was stopped, the patient improved, but in the severe cases permanent harm resulted. The author states that in the neuropathic type of chorea, he has not observed these detrimental effects. He is unable to explain the toxic effects of the arsenic in the one case and its absence in the other.

Veronal, a New Hypnotic.—This new drug, first introduced, a short time ago, by E. Fischer and v. Mering, has since been tried by a number of men, the last report being by F. LORSCH, of the 'Charité' in Berlin (Fortschr. d. Med., July 1, 1903). He employed the drug in 30 cases of various types and found it of especial value in insomnia which was not due to pain. The effect was prompt, a natural sleep coming on usually within half an hour, and no unpleasant after-effects were observed on awakening. In doses varying from 0.25 to 1.0 gram, it may be given for a considerable period. It is, relatively speaking, non-toxic, is readily soluble and almost tasteless. It has no effect on the heart and kidneys, and in cardiac cases, with poor compensation it seemed to be of especial value. The cost is also somewhat less than that of the other newer hypnotics.

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A NEW POINT IN MEDICAL JURISPRUDENCE.

It has usually been held in the courts at least in the few cases that have come to trial, that an amputated limb or a removed tumor, is the property of the patient and that he has the right either to dispose of it as an anatomical or pathological specimen—or, as in the case of Jackson, to have it buried with full ecclesiastical rites. The case of "*Palear versus Jenkins*," however, that is now coming to trial in Chicago, presents a different point, that smacks rather of equity than law, and which seems to give more grounds for damages than for a simple charge of theft.

Custom is always a difficult thing to overcome, and habits when long continued are hard to break. We all grow used to conditions that are continuous, and are often much more disturbed by their sudden cessation than we were in their occurrence. Thus the miller does not heed the noise of his wheel while it is in motion, and nothing rouses the captain of a vessel from his sleep so quickly as the stopping of the machinery.

All this makes it trying to a person who is suddenly confronted by a radical change in what he is thoroughly accustomed to, and this change becomes almost unbearable when it is associated with personal loss, or a feeling of injury. This,

too, is more accentuated when the wrong is inflicted by one who has been trusted, and who has been sufficiently intimate to have been a companion in unusual and singular experiences.

It seems that Mr. Kasmar Palear, of Wade St., Chicago, has been not only a victim of misplaced confidence and reptiles, but has also had the bad luck of becoming a most striking illustration of "Man's inhumanity to man." Several years ago Mr. Palear swallowed a lizard, still in its tender youth, and has ever since nourished it, until it can be fairly said to be a second nature to his own. This act of hospitality has, it is true, been hidden from the world. But deep down in his vitals, Kasmar has been conscious of it, and his feelings have been constantly stirred with the warmth and glow of a knowledge of benefits bestowed.

Only a few days ago this Chicago landlord—a very host within himself—parted suddenly and in anger with his tenant, in the presence of a friend. This appears to have been a certain Mr. Jenkins who, up to this time it seems, had played the rôle of Boswell to his Johnson and occupied the position that Hennessy now fills for Mr. Dooley. What the cause of the rupture was we cannot say. It may have been one of the cases, in which out of the fulness of the heart the mouth speaketh: or he may have been a truant lizard that thought his home a cage. At all events, he appeared on the scene as green as the leaves of the forest in summer, and dotted with spots as unchangeable as those of the leopard. Poor Palear was stupefied, for he was in the position of the man who with honorable intentions had long corresponded with the object of his affections, without a personal interview, and suddenly discovers that he had builded better than he knew. But if he was dazed his quondam friend was not, and off he started in pursuit.

It was, it seems, a case of up Jenkins and down lizard from the start. At last he captured the errant reptile, and now he claims it for his own. To this Mr. Palear will not agree, and in a sworn statement he declares that he has been robbed of what has long been an integral part of his personal estate. He claims also that it has a cash equivalent, and that he has been feloniously deprived of ten inches of lizard, valued at twenty dollars per inch, and that Mr. Jenkins having been present at the first interview, is fully cognizant of these facts. To these allegations Mr. Jenkins offers no demurrer, but claims the thing is his, by right of capture and his own strength of nerve.

What the judge will rule is hard to say. The legal points are delicate and involved, as the statutes on landlord and tenant do not apply, the lizard having vacated voluntarily. As yet Mr. Paelear has made no demand for unpaid rent. Neither has Mr. Jenkins sufficient authority to class the lizard's occupation as eminent—though it was certainly extraordinary—domain.

As to our sympathies, they are with Mr.-Paelear—he had it first.

KIDNEY DISEASE AND INSANITY.

STUDIES of the excretory organs and excretory functions are gradually bringing to light corroborative evidence of the autotoxic theory of insanity. Unfortunately, such studies have, for the most part, been limited to some observations on the kidneys and the urine. The unusually frequent association of kidney disease with the various forms of insanity has been repeatedly shown and statistically proven during the past few years. If the kidneys are called upon to excrete an increased quantity of indican and the sulphates in some forms of insanity (Hamilton and Turner), or an increased amount of xanthin compounds or of uric acid (Haig), or even an occasional poison like acetone (Wagner), demands are made upon these organs which will ultimately show themselves in well-marked kidney lesions.

The observations of Bristowe on paresis, in which he found a gross kidney lesion in 88 per cent. of his cases; Beadles' figures for 150 post mortems in insanity in general, 70.6 per cent., and Prout's figures for a like number of autopsies, 69 per cent., are fairly well known. The extreme frequency of kidney lesions in paresis has been especially noted by both Bristowe and Prout.

Beadles compared his figures with some statistics from St. Bartholomew's Hospital. In 194 deaths from all causes in persons over thirty years of age, 48 per cent. showed a gross kidney lesion at autopsy. If the cases of insanity under thirty years of age were excluded from the figures given by Beadles and Prout, the percentage of kidney lesions in the remainder of their cases would be much higher.

Perry has recently published some observations on this subject and has carried his investigations a step further than the autopsy table (Transactions of the Medical Association of Georgia). He finds evidences of nephritis in 33.7 per cent. of the cases admitted to the Georgia State Sanitarium and in 70 autopsies the percentage showing kidney lesions was 85.5 per cent.

Unfortunately there is no tabulation of the ages of the patients in either the urinalyses on admission or the autopsies. The author found casts in the urine, when albumin was absent, in 19.1 per cent. of the cases examined on admission. He considers this together with the very great frequency of the occurrence of cylindroids, as evidence of long standing renal irritation. Another fact of much importance pointed out by this author is the extreme frequency of arteriosclerosis (88.5 per cent.). Here again we miss the tabulation of the facts, according to the ages of the patients; the author states its occurrence, however, in a number of cases under thirty years of age.

All these changes are probably of secondary rather than of primary origin, but their importance is of the first rank. Cardiac hypertrophy would suggest itself as one of the first sequences of changes of this character, but no adequate statistics are at hand in support of this theory. Some work has been done on valvular heart lesions in the insane, but thus far no systematic efforts at determining the cardiac area in all cases of insanity have been made. The great therapeutic importance of determining this point is obvious. The various organs of the body have received too little attention at the hands of both asylum clinicians and pathologists, the tendency being to skip hurriedly over the internal organs and to spend much valuable time on the brain, an organ our knowledge of the physiology of which is so limited that no investigations except those of the most painstaking and exhaustive type can be of any value whatever. Unfortunately, the requisite knowledge of the undertaking of work of this character and the opportunities for acquiring it, are rather limited with us.

Some fields of investigation are, however, directly accessible and would well repay investigation. The liver, the lungs, the skin and blood states in the insane in general, have been almost entirely neglected in the impatient haste to get at the brain with faulty methods and a technic more faulty still. If the autotoxic theory of insanity is correct, the various organs of the body having any major part in the processes of elimination should be investigated first for corroborative evidence of it.

Perhaps no research would bring larger returns in the shape of practical discoveries than a systematic and extensively conducted investigation of the changes that take place in the blood and the secretions and excretions of these patients.

THE UNIVERSITY IN MEDICAL EDUCATION.

ONE of the few opportunities out of the pulpit that is afforded to preach ethics and high standards, comes to men eminent in their profession when they are invited to address a graduating class at a University commencement. Doubtless the best idea of a nation's ideals and aspirations can be obtained from such addresses, and a better appreciation of educational values has been brought about by the long established custom.

The annual address to the graduating class of the Yale Medical School given by Dr. Henry M. Hurd of Johns Hopkins Hospital, and published in *Science*, contains suggestions that are pertinent to all interested in medicine.

After tracing briefly the circumstances of medical education in America, he shows the two methods by which different colleges and institutions approach the question "How shall medical education be studied." On one hand there is the opportunity given to the student to begin his medical work in the third year of college, and to combine his studies for his bachelor and medical degree. On the other hand there is the tendency to divorce the medical question from the college course and to pursue the latter independently. While the first mentioned is the more practical method, and the one most likely to be in vogue, the latter tends more to general culture.

Dr. Hurd maintains that the present requirements for medical education have become so extensive and exacting, that schools which have hitherto been maintained as commercial ventures, and for the private gain of their owners, can no longer be profitable if they honestly seek to do their duty towards the student. Such schools although making the most praiseworthy efforts to fit men to be doctors, do little for the science of medicine. He holds that the present situation demands that schools connected with universities shall perceive the need of the student, and protect him from imposition by affording him instruction of a high standard, and that the university should set the standard. The country suffers from too many imperfectly educated men. The university is alone competent to limit the production and to improve the quality.

The intensely practical nature of the studies of a physician are by no means undervalued by Dr. Hurd, but he holds that in view of the tremendous scientific achievements of the last half century, and the possibilities of still more brilliant work, that the medical school needs every advantage that the university can afford.

ECHOES AND NEWS.**NEW YORK.**

Prevalence of Trachoma.—Dr. John C. Lester, assistant surgeon of the New York Eye and Ear Infirmary is authority for the statement that there are at least 25,000 cases of trachoma in this city. The disease is common among foreigners and they are largely responsible for its spreading.

Board of Health Clinic.—Plans have been filed at the Bureau of Buildings for a one-story brick clinic, 25x80, to be erected at No. 965 Sixth avenue, for the purpose of examination of patients thought to have contagious diseases. There will be an X-ray room, throat examination room, drug store, two clinics, and a general examination and waiting room.

Bellevue and Summer School of Philanthropy.—Fifty members of the Summer School of Philanthropy paid a visit to Bellevue Hospital last week. They spent some time in the office of Dr. William Mabon, the superintendent, where the workings of the hospital were explained to them. In company with one of the staff doctors and a nurse they visited all the departments.

Cost of Enforcing Dog Ordinance.—The Aldermen, upon receiving from Mayor Low a statement to the effect that President Haines of the Society for the Prevention of Cruelty to Animals wanted \$76,800 a year to carry out the recently enacted dog-muzzling ordinance and would need \$26,000 of it immediately in order to enforce the regulation during the hot weather, referred the matter for an early report to the Committee on Laws and Legislation.

PHILADELPHIA.

Dr. Stelwagon Honored.—Dr. Henry W. Stelwagon, Clinical Professor of Dermatology at Jefferson Medical College, has been elected to honorary membership in the National Dermatological Society of France.

Baby Directory to Cover Entire City.—The Bureau of Health has decided to apply the system of visiting and registering babies under one year old to the entire city instead of to the district south of Spruce and east of Broad street, as originally planned. The entire force of fifty District Physicians have received instructions regarding the work which will begin as soon as the registry cards and circulars are ready. It is considered quite probable that the present force of fifty physicians and sixty nurses may have to be increased before the end of the summer.

Mothers to be Instructed in Care of Children.—Plans to give a series of plain talks to mothers on the care of babies are being perfected by Dr. Martin, Director of the Department of Health. Nine physicians have volunteered their service to carry out the work. The lectures will be held under the auspices of various church guilds, day nurseries, the College Settlement and the Pennsylvania Congress of Mothers. All these centers will arrange localities and fix the date for the physicians to give their lectures. A circular outlining the topics to be treated by the physicians in these talks has been prepared by Dr. Martin. Special efforts will be made to reach the mothers who do not understand English.

The Municipal Hospital Affair.—Since the appointment of the Director of Health and Charities there have been comments upon the frequent appearance of newspaper interviews regarding the work of that department. While the great majority

of these interviews have been entirely innocuous, it was thought by the more conservative that many of the criticisms (even though they were just) on existing affairs, as well as plans for the future, should be given less publicity. As a logical outcome of this newspaper campaign there has appeared an undesirable controversy regarding the management of the Municipal Hospital. As to whether the severe strictures upon Dr. Welch's management of the hospital made by Dr. Martin are deserved we are not at present concerned. Dr. Martin undoubtedly found at the Municipal hospital many things that were not as they should be. Some person or persons are responsible. Whoever he or they may be, Dr. Welch can hardly be blamed for replying to the following which is part of what was quoted in one of the leading daily papers as coming from Dr. Martin regarding the hospital: "I cannot understand how the institution could have been conducted in the past to bring about such a deplorable condition both as regards equipment and organization. People suffering from contagious diseases are compelled to go there, and it is not too much to say that they run great risks of not only failing to be cured, but of contracting other diseases from neighboring patients. I am astounded at the gross negligence which has characterized the management of the Municipal Hospital. The equipment and the discipline are almost a disgrace to the city, and will need the concerted attention of the Health Department to bring the institution to the condition in which it ought to be for the reception of patients. Dr. Welch is undoubtedly responsible to some extent, but just how far I do not know. We are making a very searching investigation to determine who is to blame. There is no fault to be attached to the Councilmen, for they have had no appropriation measures submitted to them for consideration. The whole matter has arisen from the neglect of the management of the institution to apply for aid from the city in the proper and customary way. And this neglect is typical of the general conduct of the hospital in the past. It passes comprehension how men to whom its affairs have been intrusted could allow it to become so run down." On the other hand, the statement that Dr. Martin's accusations are prompted by the outcome of last year's factional contest in the County Medical Society over the endorsement of a candidate for President of the Medical Society of Pennsylvania, is unworthy of its originator. The members of the Medical profession in Philadelphia will welcome needed improvements in any service that comes under the jurisdiction of the Director of Health and Charities and stand ready in every way to aid the Department, but they deplore the present publicity of criticisms emanating therefrom.

Smallpox and Red Light.—The suggestion to combat smallpox with the red light treatment has been abandoned by the health authorities in Philadelphia after consideration. It is an old idea, centuries old in fact, and is said to have been put in practice by the Arabians. Prince John, a son of one of the Edwards, was treated by this system. Everything was red. He was even given mulberry wine on account of its color. The theory is that daylight, and especially the chemical rays, have an injurious effect on smallpox patients, inasmuch as the strong rays of the sun cause inflammation or sunburn in healthy persons. But experiments at the Municipal Hospital in Philadelphia did not confirm this theory. Only negative results were obtained there, as in other hospitals where the treatment has

been tried. In Philadelphia the room used was painted red and had red glass windows. Red curtains obscured the doors and red globes covered the gas jets. The patients were neither harmed nor benefited. Within the last year a red light ward for the treatment of smallpox was constructed in the hospital in Indianapolis. One hundred and forty victims were put in this new ward and by way of experiment the same number of cases was placed in the ordinary ward. The results showed that the red light treatment was neither baneful nor beneficial, and the treatment was abandoned. In Norway and Belgium the red light treatment for smallpox is used extensively and they contend with success in reducing the mortality list. But it is well to remember that in those countries vaccination is the universal practice. Reason, as well as tests, disprove the theory. Diffuse rays of light are not capable of inflaming the skin. Only the strong light of the sun does that. The negro has the best possible protection in his skin against the action of the rays of the sun, and yet negroes have more occasion to dread smallpox than white people have. So, too, if the actinic rays of the sun aggravate the eruption of smallpox, then the smallpox in summer ought to be worse than the smallpox in the winter. Yet smallpox is usually more severe and more abundant in winter than in summer.

CHICAGO.

Fewer Contagious Diseases.—Only 57 cases of the contagious diseases—diphtheria, measles, scarlet fever, smallpox, etc., were reported during the week ending July 18th. This is the lowest number since September, 1901. In the corresponding week last year there were more than twice as many—119—and the 34 cases of diphtheria and 14 cases of scarlet fever reported this week are one-third and one-half less than the respective number reported during the previous week. Measles, which has been epidemic for many months, is fast disappearing, as also is smallpox, the solitary reported case of which was that of an unvaccinated infant of 6 months.

Decrease in Infant Mortality.—During the week ended July 18th there were nine fewer deaths in children under one year of age than the week before, and 25 fewer than the corresponding week of last July. A more marked result is seen in the fewer deaths among the aged, those over 60 years. This decrease in mortality in the two extremes of age is due to the "summer resort" weather Chicago has been having.

Personal.—Dr. N. Senn is taking his vacation in the West, visiting Rock Springs, Wyoming; the Yellowstone Park, and from there he will go to the Yosemite Valley.

Mortality Comparison.—During the first six months of this year a total of 15,201 deaths from all causes were reported, giving an annual death rate of 16.24 per one thousand. This is an increase of 3,103 deaths over those reported for the first six months of 1902, and an increase of 18.5 per cent. in the annual rate in proportion to population. Of the causes of death showing the greatest rate of increase were typhoid fever, 154 per cent.; scarlet fever, 147 per cent.; measles, 136 per cent.; pneumonia, 60 per cent.; Bright's disease, 58 per cent.; acute intestinal diseases, 29 per cent.; suicide, 24 per cent.; consumption, 17 per cent.; heart diseases, 14 per cent. Pneumonia causes 3,133 deaths in these six months, as against 1,961 in the first six months of 1902, and consumption 1,561 and 1,325, respectively.

GENERAL.

Appointment of Professor Kraepelin.—Dr. Emil Kraepelin, professor of psychiatry at Heidelberg, has been called to Munich.

Library of Professor Schede.—The library of the late Professor Max Schede, formerly director of the surgical clinic of the University of Bonn, has been presented to the clinic by his widow.

Retirement of Prof. Huppert.—Dr. Carl Hugo Huppert, professor of medical chemistry at the German University of Prague, will retire at the end of the present semester.

Appointment of Dr. Page May.—At University College, London, Dr. Page May has been appointed lecturer on the physiology of the nervous system.

McGill Appointments.—The following appointments have been made at McGill University: Dr. J. G. McCarthy, to be assistant professor of anatomy; Dr. J. T. Halsey, to be assistant professor of pharmacology and therapeutics; Dr. R. A. Kerry, to be lecturer in pharmacology and therapeutics; Dr. S. Ridley Mackenzie, to be lecturer in clinical surgery; Dr. John McCrae, to be lecturer in pathology; Dr. D. A. Shirres, to be lecturer in neuropathology; Dr. D. D. McTaggart, to be lecturer in medico-legal pathology.

Gift to McGill University.—The late James Cooper gave \$60,000 to form a fund from which to pay the cost of establishing, in the medical faculty of McGill University, a chair for the teaching and study of internal medicine, on lines to be determined by the medical faculty itself. This will be known as the Cooper endowment fund, and will be paid two years after the death of the testator.

Medical Department, University of Texas.—Since the publication of the last catalogue a private benefaction has been placed in the hands of the Regents in the form of a five-year endowment for University Hall. Following the purpose of this donation and conforming with the original purpose of the donor of the Hall the Regents have determined to remove from the building the University Hall Dining Club and to devote the entire hall to the uses of the women students. By this arrangement the hall will be under the control of a matron appointed by the Board of Regents; and the rooms, with the light, heat, water and service will be furnished at a low rental to the women students of the institution who may elect to take up residence in the building. The present Board of Lady Managers is continued as an advisory and visiting board; but all questions of management are assumed by the authorities of the school. It is felt that with the improvements thus made possible in the material and general conduct of the hall it will prove an admirable home for the women who are in attendance in the schools of medicine and pharmacy. In addition there have been provided two scholarships, by the Woman's Club of San Antonio, granting to the holders the sum of two hundred and forty and two hundred dollars, respectively, annually; these are to be given to those two women in the medical class who after the freshman year shall have attained the highest general averages of proficiency in their studies.

Trypanosoma, the Tsetse Fly and the Sleeping Sickness.—A highly interesting and important pamphlet has just been issued by Prof. Ray Lankester and his assistants of the British Natural History Museum in relation to the suspected connection between the tsetse fly and the sleeping sickness which has been making such havoc in certain parts of southern and western Africa. Col. Bruce dis-

covered that the tsetse fly produces the death of horses and cattle by introducing into the blood of its victims a minute parasite, and in the early part of this year Dr. Castellani, a member of the Royal Society Commission, sent to Uganda to investigate the sleeping sickness, found this parasite in the cerebro-spinal fluid of nearly 70 per cent. of the cases of sleeping sickness examined for this purpose by him at Entebbe in Uganda. Until recently, it was supposed that the tsetse fly was inseparable from the African buffalo, and could only exist in districts inhabited by that animal. But this theory is now much doubted. Sir Charles Eliot, Commissioner and Consul-General for British East Africa, is convinced that the buffalo cannot be the only host of the parasite which the tsetse fly introduces into the blood of domestic animals. Commissioner Sir Alfred Sharpe declares that the tsetse flies appear to depend upon wild game for their existence, as he had never found them where game was non-existent, but does not think that they are in any way especially dependent upon buffalo. Mr. F. J. Jackson, Deputy Commissioner for British East Africa, is firmly of the opinion that in East Africa the existence of the tsetse fly was never in any way more closely connected with buffalo than with any other species of game, and expresses his conviction that the tsetse is, like the mosquito, only a blood-sucker by predilection.

Our Chaotic Food-laws.—Under this caption the New York *Evening Post* very soundly says: Professor Wiley's report on his "poison-squad" experiments is not to be made public, it seems, until October. But recently, in an address at St. Paul, he made it pretty plain that they have only confirmed the position of the German Government—namely, that the use of food preservatives is harmful to health. Some preservatives, at any rate, Professor Wiley admits to be "deleterious," and he urges legislation, both national and State, to prevent food adulteration and the use of pernicious preservatives. The safeguards provided by the new law against impure or falsely labelled foods and wines imported from abroad are, indeed, in striking contrast with the inadequate and confusing statutes which are supposed to protect us from adulterated and injurious food products at home. By the act which went into effect on July 1, the Secretary of Agriculture is clothed with authority to confiscate any shipments of objectionable foreign foods at the Custom House, although, in the Attorney-General's opinion, his jurisdiction does not apply to such as are imported in the pure state, and adulterated or falsely branded afterwards. It is a law which, wisely and thoroughly enforced, should shield effectually the customers of the "fancy grocery store." Meanwhile, how do we stand with reference to domestic products, compared with which imported food is trifling in quantity? Many of the States, especially in the East, have food laws. Some have good laws, earnestly enforced; some good laws with no machinery to carry them out; some lax laws, and some no laws at all. There is no uniformity except in so far as the States have copied one another's statutes. It is a remark of Professor Wiley, Chief of the Department of Agriculture's Bureau of Chemistry, that a food manufacturer requires the services of a lawyer to see that the laws of the different States are complied with merely in the matter of printing labels. Take the case of a jam or a jelly containing glucose in place of cane sugar: in Ohio or Massachusetts its label must show the exact proportion of each ingredient ac-

cording to analysis. In Minnesota, the label "adulterated mixture" must be affixed to this same jam, in Pennsylvania "compound," and in Illinois "imitation." In this State, the law can be complied with by the declaration in fine type around the edge of the label in the guise of an ornamental border that the preserve "contains a small amount of corn syrup [glucose] to prevent crystallization." It is often illegal to sell in one State a product which was put up in strict conformity with the law of its next neighbor.

Toward remedying this chaotic condition, Congress has done almost nothing. The Hepburn National Pure Food bill which passed the House last winter, reached the Senate late in the session and died there. At the demand of the dairy interests, however, a discriminating tax was placed on oleomargarine colored as butter is colored, though this is a perfectly wholesome article of food. Protection against one form of deception is also afforded by the act which makes it a misdemeanor to introduce into any State a dairy or food product falsely labelled as to the locality of its production. This law was introduced by Representative Sherman of this State, and was designed especially to prevent the branding of cheeses produced elsewhere, as the famous "New York full cream cheese." So far as the national law is concerned, it makes no difference whether the product is really a full cream cheese, provided it were made in New York. The fortified wines, then, the borax-preserved sausage, the re-imported cottonseed oil, masquerading in the guise of "pure olive," and the French peas colored with copper, Congress is resolved to keep from our tables. It does not concern itself with the "pure maple sugar" which never saw a maple tree, the "comb honey" made of paraffin and the indispensable glucose, the low-grade flour whitened with alum, the dilute acetic acid which passes as vinegar, the red wood and charred peanut shells in spice boxes, or the strawberry jam made of flavored and tinted glucose and gelatin mixed with timothy seed, all of which are domestic products. The working-man may be sure that his *petit pois* and cognac are all that could be desired, however much doubt there may be as to his bread and salt. The consumer of impure food is cheated even when he is not poisoned. If he wishes to economize by using oleo or the euphemistic "corn syrup" on his table, that is his own concern, but it is unfair both to manufacturers and buyers if these things can be put on the market as maple sugar and butter. If all the States had good food laws and enforced them, a national law might be unnecessary. As it is, one of the chief difficulties of city health departments is to hunt down the impure food products brought in from other localities. It is comparatively easy to hold the manufacturers to account, and a single rigid inspection of a factory may result in holding back from the market large quantities of deleterious food products. It is a very different matter to seize a half-dozen packages of this same food at a corner grocery store, and then throw the responsibility back upon the maker who may have violated no law of his own State. The national statute would not only stop shipments of the harmful commodities from one State to another, but also furnish a model for those States which have not yet passed food laws of their own.

Explosive Bacterial Products.—The comparatively new method of purifying sewage by encouraging the growth of certain forms of bacteria in it, while it is retained in closed tanks, has recently led to several

serious and novel accidents in England. Certain inflammable and explosive gases are formed during the closed tank stage. These have in three instances, viz., at Exeter, Walton-on-Naze and at Sheringham, exploded with more or less serious results. At Sheringham the explosion killed three persons and seriously injured several others.

Obituary.—Dr. John Evans Walker, a prominent physician of this country, well known throughout the South and in New York city, died July 24th of hemorrhage of the brain. At one time he was the immigration medical inspector at Ellis Island, New York.

Dr. Milo Hotchkiss Jones, son of Dr. Leander P. Jones, and assistant to his father, the health officer of Greenwich, Conn., died last Monday of a fever contracted two weeks ago while attending to his duties. He was only twenty-eight years old. He was graduated from the Yale University medical department and practised for a year in Bellevue Hospital, this city.

OBITUARY.

DONALD MACLEAN, M.D., LL.D.

Dr. Donald Maclean, ex-president of the American Medical Association, and until recent years one of the most widely known surgeons in the Middle West, died at his home in Detroit, Michigan, July 24th. He was born at Seymour, Canada, December 4, 1839, of Scotch parents, his father, a man of brilliant attainments, in spite of his total blindness almost from infancy, being an eminent lawyer and leader of the Canadian Bar. At the age of six, young Maclean was sent to a famous school for boys at Edinburgh, where he remained six years. When sixteen years old he matriculated at Queen's College, Kingston, Ontario, from which institution he was graduated in 1858 with the degree of Master of Arts. During the summer of the same year he returned to Edinburgh and began his medical studies at its University, receiving his degree of Doctor of Medicine and his license from the Royal College of Surgeons, Edinburgh, August 1, 1862.

During the last year of his medical course, and throughout his subsequent hospital service, he was closely associated with the celebrated Professor Symes, and to this surgeon's influence and teaching he always attributed his own success in surgical practice in after years. Many years after graduation he edited and published, largely at his own expense, an Americanized form of his preceptor's "Principles of Surgery," which, however, never attained great popularity as a text-book in this country.

In January, 1863, Dr. Maclean returned to America, and immediately entered the United States Army as acting-assistant surgeon. In 1864 he resigned in order to accept the chair of clinical surgery in the Royal College of Physicians and Surgeons at Kingston, Ontario, which position he retained until 1869. In 1872 he was appointed professor of surgery at the University of Michigan at Ann Arbor, where he remained seventeen years. In 1889 he severed his connection with the University and removed to Detroit, where he quickly built up a very large practice. In 1893 the degree of LL.D. was conferred upon him by Queen's College, Kingston, and in 1894, at the San Francisco meeting, he was elected president of the American Medical Association, the duties of which position he

discharged with dignity and discretion. On the breaking out of the war with Spain he accepted a commission as chief surgeon with the rank of major and was assigned to duty at Fortress Monroe, thus reentering the service of the United States after an interval of thirty-four years.

During the past two years his health had gradually failed and he had entirely given up active practice. The immediate cause of his death was gastroenteritis.

It falls to the lot of but few men to possess the friendship and esteem of those with whom he came in contact, in like measure with Dr. Maclean. Ever going out of his way to lend a helping hand to those less successful in the battle of life than himself, his purse always open, during his active career he was the embodiment of all that is noblest in the life of a physician. Tenacious of his opinions, like all Scotchmen, a master of argument, yet he was unequalled in courtesy, unvarying in his inability to cause pain to the most sensitive. He loved well and, like all strong personalities, he hated well, but few of those who were most closely associated with him and who knew him best ever plumbed with certainty the depths of his feelings. Oftentimes an avowed enemy—an enemy only because of differences in opinion—became his warm friend, unable to withstand the influence of his honest, lovable nature, but never did a friend become his enemy.

SOCIETY PROCEEDINGS.

HARVARD MEDICAL SOCIETY OF NEW YORK CITY.

Regular Monthly Meeting, held May 23, 1903.

The President, Frank Daniels, M.D., in the Chair.

Some Medical Features of Life Insurance.—This was the subject of the paper of the evening by Dr. Augustus S. Knight.

Heredity and Brevity of Life.—Dr. Knight said that the occurrence of short-lived families, members of which died at comparatively early ages, was now generally acknowledged as the occurrence of distinct heredity longevity in other families. Hence the necessity for careful gleaning of the family records for life insurance purposes. Certain families seem to have much less resistance to acute and chronic disease, besides their tendency to inherit certain specific diseases. Gout is a question of inheritance largely, and it is well understood that the condition of arteries which predisposes to apoplexy is also inherited.

Cancer and Life Insurance.—Very often the existence of cancer in families is denied at the time of medical examination, though subsequent revelations show that it has been present. Malignant disease constitutes the main reason why life insurance for women has never proved a successful feature of the business. While women live longer than men in the general mortality statistics, and while the medical examination ought to secure only the selected lives among women, somehow the mortality statistics of these selected lives were never as favorable to the company as the selected lives of men insured.

Underweight and Overweight.—Individuals who are under the normal weight are not favorable subjects for life insurance for two reasons. First, because of their liability to phthisis, and secondly, because of a special tendency to nervous diseases of various kinds. It seems probable that many of the cases of underweight, which later develop phthisis, are really examples of undiscovered tuberculous lesions of the lungs, or cases of

latent or partly healed tuberculosis. Persons who are overweight are quite as unfavorable subjects for life insurance. They succumb especially to acute diseases, to surgical operations and to accidents. They have a special liability to heart complications and to apoplexy. Such persons usually eat too much and take very little exercise and thus throw a heavy strain on their heart arteries and eliminating apparatus. The statistics of life insurance companies show that persons who are overweight are especially liable to apoplexy and to heart complications of various kinds, and that in them accumulation of fat around important organs seems to make the general nutrition of low grade vitality, if it is not that the tendency to produce fat is in itself a manifestation of lowered vital resistance.

Substandard Risks.—It is easy to understand then that life insurance companies have had to create a class of substandard risks, that is, of lives on which insurance is granted only for definite terms under special conditions and at rates above the ordinary, according to the amount of extra risk involved. When individuals are 25 per cent. above the normal rate, the death-rate from all the causes described is prone to be high, and such cases can only be taken on the substandard basis. Practically all of the tendencies that are known to cause shortening of life, when-existent in persons who have no absolute organic disease, come under the same classification.

Occupation Hygiene.—In recent years particularly, insurance companies have come to recognize that the moral hazard with regard to life insurance is more important than the added dangers of premature death because of conditions impairing vital resistance that may be found by medical examination. Individuals of immoral habits are proverbially short-lived, and the expression "they go the pace that kills" is literally exemplified by the statistics of life insurance companies. Gamblers, those engaged in the liquor business, and men who make their living by their wits are prone to be in frequent danger of excesses that eventually lead to shortlivedness. Even when bartenders do not use tobacco or liquor they are almost sure to be below the standard in actual expectation of life. Immorality has something to do with this, and the carelessness begotten of late hours, irregular living and the like are other important factors. In deciding the class of risk and the probability of its proving profitable for the company, physicians should take these considerations into account. The question that physicians have to answer with regard to the personal circumstances and the hygienic conditions of life of the patient refer to the moral hazard as well as to any physical risk that may seem to be present.

Women in Life Insurance.—According to the census, women on the average live to attain a higher age than men. This is what might be expected from the fact that they are not exposed to so many dangers, are not prone to so many excesses, are not exposed to unsuitable weather conditions. They would seem to be, therefore, eminently suitable risks for life insurance. The selected risks, those, namely, which had passed medical examiners, would seem to be especially likely to be profitable for insurance. Notwithstanding all these facts, the insurance of women has so far proved a constantly losing feature in life insurance. The main reason for this is that the moral hazard is greater in the insurance of women. The whole proposition must be looked at from the standpoint of financial risk. If many women applied for life insurance it would be different, but of the comparatively few who do apply, most are living under circumstances that makes the moral hazard much greater. Men, as a rule, do not consider that their wives should be insured, as they realize that it is the wives and not they who are the proper subjects of ben-

efit by life insurance. The main reason for the failure of the life insurance of women to be a profitable feature would seem to be that women much more frequently have an intuitive premonition of failing health than have men. They are more liable to malignant disease, which carries off so many victims in early middle life. Insurance companies have decided that the insurable interest in the case of women is not more than may be required to pay the expenses of the last illness and the funeral. Of course, where women are wage earners, or where they are active partners in business, there may be good reason for insurance, for the benefit of children or of partners. In these cases the insurable interest in a woman's life is quite as evident as in that of a man, and, taken on the whole, the insurance of such cases has not proven a money-losing departure for the insurance companies.

Heart Disease in Substandard Risks.—The existence of a slight heart lesion is the most frequent reason of classifying risks as substandard. Aortic heart disease, as the most frequent forerunner of sudden death, is not considered suitable for insurance, and is always rejected. A condition of mitral stenosis if of no great degree and if unassociated with mitral regurgitation, may be accepted, under special conditions. In the same way a slight amount of mitral regurgitation may be an acceptable risk, provided there has been no signs of any break in compensation at any time, no matter how long before the examination of the subject. The most important features with regard to the acceptability of slight heart cases as risks is the general condition of the applicant, his or her previous history and the question of weight. Any tendency to overweight is considered as a bad sign in those with any heart trouble and usually leads to their rejection.

Dyspnea and Failing Compensation.—If there has been at any time a tendency to dyspnea, that is, a marked shortness of breath in going up stairs, then a cardiac case is not acceptable as a life insurance risk. Further signs of dyspnea are incompatible with any prognosis of prolonged life. This is usually the first symptom of a break in the compensation, but other signs may be helpful in determining that the heart muscle has become incompetent for its work, marked tendencies to headache or a lessened amount of urine or nervous irritability of the heart when there is also an organic condition are all symptoms that forbid the assumption of the risk.

Albuminuria.—There are many patients suffering from albuminuria, who will live a score or more of years. Life insurance companies have been condemned, but without proper reason, for the rejection of such cases. The trouble is that medical science has so far furnished no distinction that gives any assurance as to the prognosis of cases in which albuminuria is present. The amount of albumin is not enough to decide this, and a trace of it may be the signal for a fatal termination within a few years, while a considerable amount is occasionally present, yet the sufferer may continue in life for a period long enough to make life insurance assumed on him profitable. Over and over again this has been demonstrated by the records of life insurance companies with regard to albuminuria, which have been very faithfully and completely kept in this matter for the twenty years. Many good authorities in clinical medicine are convinced that there exists a functional albuminuria dependent not on some lasting pathological lesion of the kidney, but on some passing condition either in the blood or in the renal secretory cells and without ultimate danger for the patient. Functional albuminuria is not easy to determine, however. More than once traces of albumin that have been attributed to functional albuminuria have proved eventually to

be the preliminary signs of beginning Bright's disease, with fatal issue in from three to five years. Insurance companies have decided that unless certain conditions are all present in a case in which albuminuria occurs even intermittently, the risk will not be accepted. These conditions are those which have been found to occur in cases where careful following of the history has shown that the albuminuria continued for many years without any effect upon the general health.

Conditions of Functional Albuminuria.—First there must be no family history of Bright's disease. While Bright's disease is not in the strict sense of the word an hereditary affection, there is no doubt that cases of renal degeneration are prone to run in groups in individuals who are closely related to each other. There must be no renal symptoms, that is, the urine must be otherwise normal; there must be no tendency to pain, no irritating condition of the urine itself and no other abnormal constituents. Besides this, the patient must be under forty years of age, must have no bad habits and must never have suffered from any, even the slightest amount of dropsy. The aortic second sound must not be accentuated, and the blood pressure in the general arterial system must not be higher than normal. The specific gravity of the urine must not be below 1.010, and there must be some period within the day when the urine is entirely free from albumin. There must be no casts present as a rule. If the patient is otherwise healthy and the urine perfectly normal, a few hyalin casts may be present, without necessarily requiring the rejection of the case.

Diabetes.—Whenever there is any sugar in the urine the case is always to be considered as extremely doubtful. Insurance companies recognize, however, that alimentary glycosuria may occur, and that this does not necessarily mean the approaching death of the patient. If there is glycosuria and no other sign of diabetes, that is, if the patient is not thirsty, does not pass large quantities of urine, has not the tired feeling nor the tendency to cramps characteristic of diabetes, the case may be taken under consideration. A certain number of these cases are now accepted as substandard risks. There are no hard and fast rules for them, however, and each case must be judged by its individual merits. As a rule, cases in which sugar appears in the urine, except at the high tide of digestion, are to be considered as risks not worth accepting at any rates.

Dr. Charles Schramm, opening the discussion, said that it is interesting to realize that insurance companies have taken up this question of the insurance of substandard lives, and especially of accepting risks on patients suffering from slight amounts of valvular heart disease. There seems every reason to think that the statistics gathered under these circumstances by the companies will prove of great assistance in enabling medical men to make a more exact prognosis in these cases than it has been possible to make hitherto. There is no doubt that the companies will find such risks not so forbidding as they have been considered, since comparatively long life is by no means incompatible, as any practitioner of large experience in the cases of heart disease is sure to know.

Medical Experts in Life Insurance Trials.—Dr. Reynolds Wilcox said that his experience in the medical aspect of life insurance has consisted in opportunities for giving expert testimony in order to compel the payment of death claims. Dr. Wilcox is of the opinion that the medical examiners for life insurance companies are prone to reject many risks that would undoubtedly prove opportunities for profitable insurance. On the other hand, by a curious opposite anomaly of judgment, many cases suffering from affections sure to bring a premature end to life have succeeded in passing medical

examiners. Dr. Wilcox has seen individuals suffering from diabetes, from arterial degeneration, from severe nephritis, from pulmonary tuberculosis, with a cavity already present, secure policies which matured by death within a year or two. This failure on the part of medical examiners to recognize grave diseases is due to the fact that their examination is made by rule of thumb, by routine method without regard to individual cases.

Insurance Companies' Directions.—Some of the directions given to life insurance examiners by their Boards of Medical Examiners for the companies are difficult to understand. For instance, there seems to be a special insistence on the danger of tuberculosis after typhoid fever, which somehow is not borne out by the clinical experience of medical men who devote themselves more especially to the treatment of these affections. On the other hand, the time limit as to tuberculosis and its dangers in life insurance seems to be set too early. As a rule, it is presumed that if patients have not suffered from tuberculosis before middle life, they will not develop it afterward. Dr. Wilcox collected the statistics of some eight to ten thousand disabled soldiers in various soldiers' homes in the United States and found that in very many cases the origin of tuberculosis occurred at an age far above middle life, often after fifty, sometimes after sixty, and at times when, by the rules of most insurance companies, the danger from the development of the disease would be considered to be passed.

Cancer in Life Insurance.—Dr. William B. Coley said that insurance companies are wise in taking every precaution with regard to ruling out cancer cases. With regard to the family history of cancer, his experience has shown him that in most cases it is extremely difficult for even the surgeon in attendance at a case to obtain this without concealments. In a recent case Dr. Coley was brought in close relations with an interesting case, in which the insidiousness of cancer was well illustrated. A young business man took out a policy for \$50,000, passing the medical examination without any difficulty. At the time of the examination he had a sore thumb, but as this was due to an injury acquired while letting down the office curtain, it was not considered important. During the healing of the wound the condition resembling that known as a run-around developed, and healing became very slow. During the healing process another pathological condition developed, which ultimately proved to be melanotic sarcoma. Amputation was performed, but to no avail, and the man died two years later of general sarcomatosis. The company refused to pay the policy, because the beginning of the fatal conditions were present when the risk was assumed, and had they been informed of their character they would have refused to issue the policy. The courts decided, however, that the applicant was in good faith, and so the policies had to be paid.

Examiners' Failures.—Dr. Follen Cabot said that examiners for life insurance companies are appointed and set to work very frequently without sufficient instruction. They are warned as a rule not to let little things disturb their judgment, and soon learn that the office prefers that a risk be reported either as good or bad. This requires definite decisions, often when such decisions are not easy to make. Regular examiners are paid a small salary, and yet the companies expect gilded work. This is a very short-sighted policy, and is undoubtedly responsible for many of the failures of the medical department properly to eliminate risks, as they come in, and also accounts, at times, for the refusal of risks which would have proved paying investments for the company. Dr. Foote said that the slight amount of increase in premiums for the increase in age does not seem quite just. The expectation of life would

seem to decrease with greater rapidity than the advance in premium.

Albuminuria and Glycosuria.—Dr. Ogden said that life insurance companies put too much weight on the presence of albumin in the urine, and lay not quite enough stress on the presence of sugar. Of course, when casts are present there is no question but that the risk should be rejected. Under middle age, however, slight amounts of albumin are often present in individuals who live to a good old age. On the other hand, intermittent glycosuria under middle age must be ruled out. It is before middle life especially that the presence of sugar in the urine is of significance. As a rule, it will not be long before the glycosuria takes on the malignant type, which characterizes diabetes in the second and third decade of life.

Life Insurance Examination as a Test of Prognosis.—Dr. James J. Walsh said that a recent interesting case of uncertain prognosis, in which the family doctor, in order to test his own knowledge, suggested that his patient should apply for life insurance, had recently come under his observation. At the age of about fifty years a prominent merchant in a rural town developed some dyspnea on exertion. As he had been gaining in weight, he did not consider this of great significance, but applied to his family physician for a tonic. His family physician found some signs of mitral trouble. Under the use of digitalis the murmuring sound completely disappeared, and the physician was not sure whether there had been anything more than a functional murmur existent for a time owing to over-exertion. He said nothing to his patient, but suggested that if he were not carrying much life insurance that this would be the time to apply for it, especially as the result of the examination would probably do away with any anxiety he might have about his health. The merchant had been approached by an agent several times previously and had been hesitating as to the question of life insurance. The next time the agent called he applied for a policy for \$50,000. He was carefully examined by three physicians, who passed him, and he secured his policy. He died two and a half years later, with evident signs of severe mitral disease.

In closing the discussion, Dr. Knight said that for the acceptance of every substandard risk there is a discussion of five high officers of the company who are selected for this purpose. While it is the policy of every insurance company to pay all honest death claims, the treasurer's office being open for this purpose every day in the year, even holidays, it is easy to understand that life insurance companies could not be made to pay if they did not endeavor to do away with every possible loophole for fraud. His own company employed no salaried men as medical examiners, and paid full fees for each medical examination, and thought that this was the best method to follow. The medical examination does not after all count for so much in eliminating undesirable risks. In the low amounts of insurance no urinary examination, for instance, is required, and yet the death-rate from albuminuria is not high. Very few men suffering from glycosuria are accepted as risks. Out of 10,000 to 12,000 substandard policies issued by his company, not more than nine or ten are sufferers from glycosuria. Occasionally, of course, in spite of apparently every precaution, mistakes are made and bad risks assumed. In a recent celebrated case the man was insured for over \$400,000, distributed in a number of companies. Just after an embezzlement he died suddenly, and it was thought that he had died from poisoning, self-administered, and as there was a suicidal waiver clause for the first year's insurance this would make the policies void. At autopsy, however, he proved on excellent evidence to have died of acute nephritis.

CHICAGO SURGICAL SOCIETY.

Regular Meeting, held June 1, 1903.

The President, John B. Murphy, M.D., in the Chair.

The Treatment of the Complications Attendant upon Chronic Gall-stone Disease.—Dr. John B. Deaver, of Philadelphia, read this paper (by invitation). In acute obstruction of the common duct, operation is not to be thought of until increasing jaundice or a period of chronicity, with fever and rapid pulse, indicate the need of such interference. Chronic gall-stone obstruction, either with its increasing jaundice or the intermittent form, has called for surgical intervention, because of the liability of such stones to cause strictures, ulceration, fistulae or damage to the pancreas and to aid in the production of suppuration of the liver ducts, when infection becomes superadded. As infection of a varying degree is practically always associated with the formation of gall-stones, and as such infection is surely accompanied by a catarrhal condition of the mucous membrane of the common duct, the presence of a calculus, even if not sufficient in size to produce jaundice, will impair the drainage of the duct, and induce a train of symptoms causing chronic invalidism.

The preparation for a gall-stone operation differs in nowise from that for any other, except in the presence of jaundice, when calcium chloride may be administered for three or four days previous to operation, in doses of 20 to 30 grains, three times a day. The use of a sand pillow is a useful adjunct in order to arch the spinal column and give a better exposure to the gall-bladder region. The author usually has it placed somewhat below the liver level, which is the point recommended by Mayo Robson, and places the table in a slight Trendelenburg position, three or four inches.

As to the incision, he fails to see any advantage in that made by Kehr; it is not only unnecessarily long, but by dividing two-thirds of the rectus muscle must certainly predispose toward hernia. The incision originated by Mayo Robson gives a perfectly satisfactory exposure of the field of operation, and by splitting the rectus muscle instead of dividing it, will insure a much stronger abdominal wall. After opening the peritoneum and inspecting the field of operation, the intestines are best kept out of the way by a few, well placed gauze pads, and over these several flat marine sponges. He uses the latter because, in spite of all precautions, some bile occasionally "spills" and the sponges soak up the fluid better and more quickly than gauze. In disposing the gauze and sponges, particular care must be given to the subhepatic space, and the region above and below the gastrohepatic omentum. The retention of purulent products in any of these fossae may give rise to serious consequences later. He hardly believes that Kehr's method of performing hepatopexy by stitching the liver to the posterior parietal peritoneum is necessary.

The preparation of the field of operation calls for the expenditure of some time and attention to detail. He would no more think of cutting adhesions or searching for a stone without having protected the general peritoneal cavity than he would rupture a periappendiceal abscess in the absence of adequate gauze protection to the intestines. Adhesions should then be dealt with, and while in some cases a few ligatures and the use of the finger and scissors would be sufficient, in others the most extensive and careful dissections will be called for. Every band of adhesion should be carefully tied and divided, and in the separation of those of a more voluminous nature bleeding should be guarded against by the closest scrutiny. After freeing the adhesions, the gall-bladder becomes exposed and the right free border of the gastrohepatic omentum is traced to

the duodenum. The gall-bladder holds the same relation to the common duct that the anterior longitudinal band does to the appendix, and the exposure of the gall-bladder and the free border of the omentum is the exposure of the field of the common duct.

A nice question may arise, to be decided when a dilated and displaced stomach due to pericholecystic adhesions has caused marked gastro-intestinal symptoms. The great advances and the brilliant results of a gastro-enterostomy may well cause an operator to pause and consider whether he can successfully break up all constricting bands and prevent their recurrence, whereas a gastro-enterostomy in addition may cause complete relief of the symptoms. Personally, he believes one should be governed by the circumstances of each case; the risk of opening the stomach and intestine is not absolutely *nil*, and the necessity of avoiding peristalsis for some hours after operation would perhaps cause extensive readherence of all raw surfaces.

Fistulae require great caution in their management, in order to avoid soiling the peritoneum with bowel contents by inadvertently opening the intestine when cutting a supposed adhesion. These cases call for the expert use of the needle and thread, and require the operator to be the master of all situations and emergencies.

From a report up to 1897, which Dr. Murphy furnished to Mayo Robson, cholecystoduodenostomy had been performed with the aid of the anastomosis button in 67 non-malignant cases, with only 3 deaths, these being due to continuous hemorrhage from laceration of the liver substance on the seventh day, to cholemia on the fourth day, and to septicemia on the fourth day, respectively. Of his 12 malignant cases, 10 died, giving a mortality of 83.3 per cent. It is important, before performing this operation, to observe whether the cystic duct is unobstructed, because if the gall-bladder is small, on account of loss of function, the operation is useless. Should the cystic duct be partially or completely obliterated, hepatic drainage is indicated, and when the gall-bladder is diseased its excision should be performed in addition.

The question of drainage occupies a prominent place in the technic of all gall-bladder operations. There is never any doubt in the mind of the operator as to the wisdom of draining the suppurative forms of cholecystitis and cholangitis. With a gall-stone partially obstructing the common duct and a shrunken, thickened gall-bladder, the most rational operation at first would seem to consist in removing the stone, closing the duct, and excising the gall-bladder. In addition to the tubular drainage, in such cases, he places two strips of gauze, one leading to the stump of the gall-bladder, the other slightly spread beneath the wound in the common duct. It is safer to drain the hepatic duct at all times, not only on account of infection, but owing to the likelihood of overlooking stones in the hepatic ducts. Kehr even goes so far as to state that after choledochotomy with suture, "even the most skilled surgeon must count upon overlooking stones in from 10 to 15 per cent. of his cases." The speaker uses a smaller-sized tube than the latter author when draining.

The question, When is the time of election for performing a surgical operation upon patients suffering with cholelithiasis, has been answered time and again by surgeons. Mayo Robson believes that "as soon as gall-stones give serious trouble, their removal by operation is the most rational method of treatment, since it is only from the complications, which in many cases of cholelithiasis arise sooner or later, that any danger after operation may be apprehended." It is the opinion of Dr. Deaver, after a rich experience in complicated and uncomplicated cases, that operation should be re-

sorted to as soon as it is definitely known that gall-stones are present. The recent statistics published by Kehr speak eloquently for the results of early operation. In 535 uncomplicated laparotomies for gall-stones, the mortality was 3.5 per cent. In 71 simultaneous operations in inoperable carcinoma of the gall-bladder, common duct or liver, in diffused suppurative cholangitis, diffused suppurated peritonitis and sepsis, the mortality was 97 per cent., nearly every case, 69 out of 71, succumbed to the deadly spread of infection or to carcinoma possibly the result of chronic gall-stone irritation. In 114 operations on the stomach, intestines, pancreas, liver, kidney, etc., 24 per cent. died. These cases were those in which extensive adhesions, chronic pancreatitis, or various changes in the liver and kidney made the operation difficult and the anesthesia prolonged. Gall-stones, *per se*, never kill, and fatal infectious cholangitis is not common in the absence of a stone in the ducts. It is only in the presence of great adhesions, fistulae, suppuration, pancreatitis, or disease of the liver and kidneys that the mortality rises in direct proportion to the grade of the complication. Operation is particularly indicated in those cases of chronic calculous cholecystitis, without jaundice, and with or without enlargement of the gall-bladder. Like the interval operation in appendicitis, with a chronic low-grade inflammation, perhaps a fecal concretion, and with more or less adhesions, the removal of the diseased gall-bladder can be performed with as much celerity and safety as can the amputation of such an appendix. Unoperated, they give rise to a train of symptoms, driving the unfortunate patient to the stomach specialist, or to places like Carlsbad. The stones are too large to pass the cystic duct, and the low-grade inflammation is responsible for a sequel of symptoms which lead to chronic invalidism.

Dr. William J. Mayo, of Rochester, Minn., said there are two important questions in connection with surgery of the gall-bladder and biliary passages, which are as yet unsettled: (1) In what cases shall we remove the gall-bladder? (2) in what cases is it wise to drain the bile to the surface? The majority of the complications of gall-stone disease are the result of delay, and that preceding this time there are diagnostic symptoms which would have enabled an operation to have been performed with much less danger. Should we, in the early uncomplicated cases of gall-stone disease, take the gall-bladder out, or is it sufficient to drain it for a time, until the biliary discharge is sterile? Without going extensively into the physiology of the gall-bladder, there is no doubt but that Murphy is right in believing that one of its functions is to act as a tension bulb, keeping the flow of bile steady instead of intermittent. This is unimportant of itself, but when the gall-bladder is suddenly cut off by a stone impacted in the cystic duct, there are not only symptoms arising from the retention in the cystic cavity, but there is usually some irritation of the liver from the increased tension and mild infection, shown in many cases by transient slight jaundice, etc. The liver soon accommodates itself to this change, and when the acute symptoms of obstruction are over such a gall-bladder can be tied off without liver drainage, but if the cystic duct is not obstructed and the gall-bladder still persists in the biliary circulation, in spite of the stones, the sudden tying-off of the cystic duct, without provision for the escape of bile, is liable to increase liver tension and coincidentally the infection of the liver ducts, and adds this condition to the usual risks of operation. It is altogether probable that in the majority of cases this would do harm, yet in the exceptional ones cessation of liver function and death may follow. As stones do not re-form after complete removal and drainage, it would seem to the speaker that the excision of the otherwise healthy gall-bladder, on account of gall-stones, subjects

the patient to some unnecessary risks, unless some provision is made for hepatic drainage. The thick, contracted gall-bladder, with obstruction at the cystic duct, has lost its function and such a gall-bladder is the one in which we are liable to have future trouble from mucous fistula, adhesions, cancer, etc. Fortunately, by reason of the obstruction, the liver has become accustomed to the change in the extension, and such a gall-bladder can be removed without biliary drainage. He has never seen harm follow the ligation of the cystic duct in such cases, and this exists in about one-third of the cases as they come to the operating table. Stones in the common duct are the cause of cholangitis, and drainage of bile to the surface is necessary either by a cholecystostomy, if the cystic duct is sufficiently patulous for the purpose, or by leaving the incision in the common duct open, the latter being the safer method. To what extent is it necessary to provide bile drainage in cases in which there are no stones in the common duct? Cholecystostomy drains the hepatic ducts by the escape of bile to the surface, and all of experience have seen a patient doing badly, suddenly relieved by a discharge of bile in a previously dry wound. So true is this that often with a patient not doing well the drains are loosened, hoping to establish bile drainage, and, if one succeeds, recovery usually follows.

He has tried to classify his cases with regard to the necessity of hepatic drainage. The following is about the position he has temporarily assumed as a result of this study: (1) If the gall-bladder contains bile and the organ is distensible, if the gall-bladder be removed, bile drainage is provided for by cutting the cystic duct across and leaving it open. If such a patient is very obese, or has degenerative lesions of other organs, he prefers cholecystostomy. (2) If there are symptoms of a cholangitis, even of mild grade, he provides for bile drainage, and if the condition is acute, the drainage must be free. (3) If the gall-bladder contains cystic fluid, but no bile, and the patient has symptoms of cholangitis, he removes the organ and cuts the cystic duct below the obstruction, to permit of bile discharge. If necessary, the cystic duct is split down to the common duct. (4) In a few cases he has directly opened the common duct for the purpose of securing liver drainage, but it is very rare that this is necessary, unless there are or have been stones in the common duct and it is dilated. The cystic duct ordinarily can be advantageously used for the purpose, although in a few instances he has found it necessary to cut it off flush with the common duct, leaving a lateral defect in its wall for drainage purposes.

This brings up the question as to how much danger of peritonitis there is as a result of bile leakage into the peritoneal cavity. If there is free gauze drainage with or without tubage, there is but little danger of peritoneal infection from the bile. He has never seen a case of death from this cause; but the drainage should be attached to the proper point by a catgut suture to prevent its floating away by the bile discharge or displacement by the action of the diaphragm upon the liver. If the common duct is greatly dilated and after removal of the calculi there is considerable detritus, the end of a rubber drainage tube is inserted just into the duct opening and secured by a catgut suture. If this condition does not exist, tubage of the common duct is unnecessary.

To sum up: Cholecystectomy is to be preferred if the patient is otherwise in good condition. If the cystic duct is obstructed and the gall-bladder contains only cystic fluid, ligation at the cystic duct, without provision for hepatic drainage, is safe. If there be any infection of the hepatic ducts, bile drainage is essential.

Gall-stones and Gall-bladder Diseases from the

Standpoint of the Physician.—Dr. Norman Bridge contributed a paper on this subject. He stated that the physician can often present the urgency of an operation to the patient better than the surgeon. Most people dread operations, and many suspect the surgeons of having undue enjoyment in the act of operating and of being biased by visions of large fees. The physician is, for these reasons, a more acceptable counselor, but even he, in these later days, says the essayist, is not free from the suspicion of seeking a part of the surgeon's reward. The author cited cases which vividly illustrate the long continuance of gall-bladder symptoms without recognition. Whether operation shall be done in all cases of proven gall-stones, or of suppuration or distention of the gall-bladder, is the same question over again of the misfortunes of the appendix. Cases become quiescent, or recover and remain so for years, even with gall-stones, the patients dying of other diseases or of old age. Hence one camp of doctors contends that in all such cases we should wait; not operate until forced to it by some urgent symptoms or situations. The other camp says that, for the sake of safety, operation should always be done promptly, since the next attack might be fatal. Both are in part right; neither can prove the other wholly wrong.

People are taking great personal risks in manifold ways all their lives, and with the lightest thought. But if one suffering from cholelithiasis, to the extent of producing marked symptoms, would minimize to the lowest point his danger of death from it, he will probably have it dealt with surgically, always provided he has a surgeon who is wise in pathology and procedure, as well as expert in technic, and provided the patient has good vital organs. That statement is still true of the diseased appendix; it is true of gall-stones and gall-bladder infection as well. All cases of chronic cholelithiasis, where the suffering has led to the opium habit, should be operated. Every case of known distention of the gall-bladder by fluid of any sort is in constant peril, and should be operated, if possible. If there is reason to believe the bladder contains pus, operation is urgently demanded. And in all cases where frequent recurrences, or the persistence of symptoms indicate the progressive contraction and fibrosis of the gall-bladder, operation should be insisted on, for in these there is constant danger of an explosion of infection that may destroy life.

All cases of proven gall-stones or gall-bladder trouble are proper subjects for surgical consultation, whether they are to be regarded as surgical cases or ever come to operation. Whether operation is to be done or not, when conditions do not sound the insistent need of an operation, or the patient declines, or the physician sees reasons against an operation, proper medical treatment should be instituted always, and persistently carried out. This is as true of the gall-stone troubles as it is of those of the appendix.

What are such measures? In the acute cases, there should be absolute rest of the body. Rest of the stomach and bowels to the extent of starvation for some days is best, especially where peritonitis is present or threatened. Nutrient enemata may be allowed tentatively, but never nutrition by the stomach in such cases. The upper abdominal organs must be kept still, not be shaken about by peristaltic movements.

In the subacute and chronic cases the daily full flushing of the bowels by alkaline laxative waters is useful, but it is irrational to suppose that gall-stones are thus washed away. Nor do olive oil or any other of the pretended expulsive agents have the smallest effect. The thing that happens is probably merely the elimination of effete matter, thus increasing the physiologic resisting power. This process is aided by a restricted diet of the most assimilable foods, and by general good hygiene.

Dr. Frank Billings, speaking from the standpoint of the internist, said that given a reasonable certainty of the presence of gall-stones in the gall-bladder or ducts, it calls for their removal by means of the surgeon's knife, with the statement modified to this effect, namely, that where there exists some disease of other organs of the body, as the kidneys, or the heart, which would render the use of an anesthetic immediately dangerous to the health of the individual, it was questionable whether operation should be done. If gall-stones are acute in their manifestation, his advice is to wait until their symptoms have diminished or subsided. If attended with jaundice, to wait a reasonable time to see if it does not diminish, and if it does to attempt to improve the coagulability of the blood by the use of calcium chloride. In recent years, by means of calcium chloride, the coagulability of the blood has been increased or improved to such an extent as to make surgical operations less dangerous than before it was given. He would go further than Kehr, if he understood him correctly, and say that if there are symptoms of gall-stones in the common duct, and they subside, and if following that, within a reasonable length of time, there are further symptoms or indications of gall-stones, he would urge operation. He understood from the paper read by Kehr at Washington that he (Kehr) would not operate on such cases. While the speaker made this statement from a medical point of view, of operating on gall-stone cases when the evidence was clear that they were present, surgeons should not forget that they owe a great deal of what they know to-day to Pasteur and Koch. It is the work of Pasteur, Koch, Lister and others that has enabled surgeons to open the abdomen in these cases, and to treat them successfully. Dr. Billings then recounted briefly the symptoms of cholelithiasis and pointed out their peculiarities. He said the medical treatment of gall-stones was instituted long before surgeons opened the abdomen for the relief of this condition. The Carlsbad treatment has been in vogue for years, and surgeons should not censure medical men too much for sending their patients to Carlsbad or resorting to medical treatment, when it was known that a celebrated surgeon who, two years after operating on his own father for gall-stones, was attacked himself, but instead of undergoing an operation he went to Carlsbad for treatment.

Dr. Arthur Dean Bevan said that in a discussion as broad as the one on the subject of cholelithiasis, he took it that brief conclusions arrived at from a review of one's own experience would be in order, and with such an idea in view he submitted the following: (1) Gall-stone disease is due to a mycotic invasion of the bile tracts, and is exceedingly common. From my dissecting room experience, it occurs in 16 per cent. of such cadavers. (2) In the vast majority of cases of gall-stone disease, the patient does not suffer from the existence of the condition. (3) A close parallel cannot be drawn between cholelithiasis and appendicitis, and the conclusions which we have all arrived at in appendicitis, *i. e.*, that a diseased appendix should in practically all cases be operated on, cannot with equal force be applied to cholelithiasis: (a) Because the disease, in its first manifestations, does not carry with it nearly the amount of danger to the patient as does appendicitis; (b) because of the enormous number of individuals who have gall-stones many have slight, single or very infrequent manifestations of the disease, which are speedily recovered from, carry little danger, and a good prospect of permanent recovery. Several of his colleagues have had single attacks, and have been advised by both surgeons and internists to await developments and postpone operative interference until the indications warranted it. (4) As a corollary to the above, the hygienic

treatment, *i. e.*, exercise, diet, salines, is indicated in cholelithiasis, as a rule, in the first manifestations of the disease. (5) Surgical treatment is indicated when the manifestations of the disease are repeated, and especially when they are frequent and severe. Surgical treatment is demanded when we have (a) an infected gall-bladder; (b) with stone or obstruction of the cystic duct; (c) with stone or obstruction of common duct. (6) With stones still confined to the gall-bladder, cholecystotomy with drainage is the operation of choice. (7) With stone in the cystic duct, or obstruction of cystic duct, cholecystectomy is the operation of choice. (8) With stone in the common duct, choledochotomy with drainage is the operation of choice. (9) With stone in both cystic and common ducts, cholecystectomy and removal of stone from common duct, and drainage of common duct, is the operation of choice. (10) With obstruction of common duct from chronic interstitial pancreatitis or carcinoma, drainage of the bile tracts through the gall-bladder is the operation of choice. (11) In the cases of cholecystitis and cholangitis simulating gall-stones, drainage of the gall-bladder should be carried out, and with this probably the use of salicylate of sodium, which is excreted through the bile, and has seemed to exert a definite local antiseptic effect. (12) To expose the bile tracts, the incision which he introduced in 1898, as modified by Weir and Mayo Robson, gives the best access to the region, makes the operation in difficult cases much easier, saves valuable time, and is least likely to be followed by hernia. (13) The mortality from gall-stone operations is surprisingly small in uncomplicated cases. He had no deaths in more than one hundred cholecystotomies, and in more than 20 cholecystectomies had but one death in 14 cases of obstruction of the common duct. (14) The prospects of permanent cure after operative removal of gall-stones are very good. The recurrences of symptoms are almost always due to incomplete operations, *i. e.*, leaving some stones or the doing of a cholecystotomy where a cholecystectomy should have been done. (15) Personally, he had seen little evidence pointing to gall-stones as a factor in the production of carcinoma, and therefore inclines the belief that carcinoma favors gall-stone formation, and is the cause and not the effect where these two conditions co-exist. (16) The modern surgical treatment of cholelithiasis is, with the exception of the surgical treatment of appendicitis, the most valuable addition that has been made to medicine during the last twenty years. Inasmuch as the general practitioner sees most of these cases, in their early history, it rests with him whether or not this valuable knowledge will be made the most of and accomplish the greatest amount of good.

Dr. Deaver, in closing the discussion, said that the points brought out by Dr. Mayo relative to the non-removal of the gall-bladder in certain cases were very apropos. In the past he had made the mistake of tying off the cystic duct and removing the gall-bladder when he should have done a cholecystotomy. However, nature had come to the rescue, had forced the ligature off, established a biliary fistula, and had saved the patient's life.

The remarks of Dr. Bevan were in harmony with the position taken by most surgeons with regard to the treatment of cases of cholelithiasis.

A short time ago, in an address delivered in this city, the speaker said the surgeons of the East had to bow to the surgeons of the West, and after hearing the remarks of Dr. Billings, he was prompted to say that the medical men of the East would now have to bow to the medical men of the West. If the medical men of the East took the advanced position enunciated by Dr. Billings in regard to operative intervention in cases of

gall-stones, it would not cause surgeons to have so many gray hairs, to spend so many restless nights, and to make them prematurely old.

SOCIETY OF ALUMNI OF BELLEVUE HOSPITAL.

Meeting of June 3, 1903.

The President, Robert T. Morris, M.D., in the Chair.

Reportable Diseases.—Dr. Hermann M. Biggs read a paper with this title with the object of eliciting some discussion as to the type of diseases which should be considered reportable. Within the last two years, he said, the Health Board had considerably increased the list of reportable diseases. At the present time this list comprised typhus fever, yellow fever, typhoid fever, scarlet fever, plague, cholera, measles, diphtheria, smallpox, chickenpox, whooping-cough, tuberculosis, malarial fever and contagious ophthalmia. In the case of malarial fever notification was required only from institutions, though private physicians were requested to notify such cases also. The speaker thought the time had arrived when a material change should be made in the attitude of the health authorities regarding reportable diseases, and that the list should be considerably increased and grouped somewhat differently. In his opinion, all the more important diseases which were infectious should be included in the class of notifiable diseases. Under the term, infectious, he would include all those caused by the simplest forms of life, and would rearrange their classification. The following tentative classification was then presented:

I. Compulsory Notification.—(a) Contagious diseases, *i. e.*, those which are very readily communicable, *viz.*, measles, rubella, scarlet fever, smallpox, typhus fever and relapsing fever; (b) Communicable diseases, *i. e.*, diphtheria, typhoid fever, Asiatic cholera, tuberculosis of all organs, plague, tetanus, anthrax, glanders, epidemic cerebrospinal meningitis, leprosy, infectious diseases of the eye, puerperal septicemia, erysipelas and whooping-cough; (c) The indirectly communicable diseases, *i. e.*, communicable only through an intermediary host, *viz.*, yellow fever and malaria.

In order to secure important information it was considered advisable to have reports on the following groups, notification to be compulsory only in the case of institutions:

II. Non-Compulsory Notification.—(a) Communicable diseases: Influenza, lobar pneumonia, bronchopneumonia, infectious diseases of the gastro-intestinal canal; (b) Parasitic diseases of the skin: Scabies, tinea tonsurans, impetigo and favus.

It was not intended that the Health Department should have surveillance over these diseases, but it was necessary to have information regarding them in order that they might be limited and controlled. For example, by such measures much valuable information could be obtained concerning malaria. It was well known that in large cities, particularly, there were many unnecessary cases of puerperal septicemia, and the notification of this disease would enable the health authorities to determine the causes, and would serve as a salutary restraint upon the abortionists. Pneumonia stood first as a cause of death in New York city, and yet the sanitary authorities had no adequate information as to the extent of this disease or as to its epidemiology. A new field of investigation had been recently opened in connection with the infectious character of summer diarrheas, and it seemed probable that some forms were much more easily preventable than would have been supposed from our previous knowledge. Investigation had shown that serious outbreaks of diarrhea and dysentery

had occurred in certain institutions and in certain areas which were in all probability preventable, and yet the sanitary authorities had no accurate and definite information regarding them. A serious objection that might be urged against the proposed plan was the largely increased labor that would be incurred by physicians. There were 35 diseases included in the list given. The English authorities paid a fee for each disease notified, and it might be possible to adopt that plan here, but this had not been the custom, and there were no funds at the disposal of the sanitary authorities for this purpose. The Health Department of New York city had endeavored to make some return to physicians for their labor in notification by aiding them in diagnosis by bacteriological examinations of certain classes of cases. This system must be admitted to have a certain monetary value, for, it should be remembered that the great mass of physicians were not prepared to make such examinations themselves, and the usual fee charged at the laboratories for such an examination was five dollars.

Ophthalmia Neonatorum.—Dr. J. H. Woodward said that there was no doubt in the minds of ophthalmologists that ophthalmia neonatorum should be a reportable disease, but whether the ophthalmias generally found in our schools should be included in this class was one open to much discussion, and without further thought he would not be willing to say that they should be notified.

Dr. W. J. Chandler said he desired to second all that Dr. Biggs had said, for he had felt for a long time that not only should these diseases be reported, but that *all* diseases should be reported to the sanitary authorities, for the accumulation of statistics and the obtaining of proper deductions therefrom. Some years ago the United States Government endeavored to collect such statistics from the local inspectors, but it was not pushed to any extent.

Dr. H. J. Boldt said he had been impressed with the paper so far as it treated of all septic infections of the puerperium. There had been such a law in Germany for a number of years, and he thought physicians as a class would look upon this proposition as very desirable. This would be especially so if the sanitary authorities took pains to see that midwives responsible for such infections were debarred from practising until the danger of spreading infection had passed. He recalled some years ago a small epidemic, with a number of fatalities, arising in the practice of one midwife. He hoped the proposed action would be taken at a very early date.

Dr. A. Brothers said that the Society was not only indebted to Dr. Biggs for this paper, but for much of the work of the Board of Health for many years past. The speaker said that years ago before taking up special work he had practised among the slums, and he knew very well what a great change had been wrought in these localities. The privilege of having exudates examined free of charge, the privilege of having material sent for inoculation, and even of having injections made by the Board of Health physicians all represented a great money value. With regard to the notification of many diseases, he would say that from the standpoint of the general practitioner it often happened that the physician was suspicious of the nature of a disease, and yet did not care to have the patient or his friends know more definitely about it at the time. This occurred more particularly in the early stages, especially in cases of tuberculosis. Most fair-minded physicians had overlooked this, but there were many physicians who felt that such regulations exposed them to much unfavorable and perhaps unfair criticism. From the standpoint of the obstetrician he could speak

feelingly because he had been brought largely in contact with midwives, and from his recollection of this experience he foresaw much trouble arising in this connection; nevertheless Dr. Boldt was right in saying that the sanitary authorities should have information on such matters. The suspension of midwives from their work would not be sufficient to meet the difficulty; he had long claimed that the people who gave the midwives their privilege to work were the ones who were to blame. In this country there was no real system of education for midwives as was the case on the Continent. Some of the so-called midwives had had no training, but had borne several children themselves and had seen two or three other confinements. He had observed more mischief perhaps from the imported midwives because they "knew it all." Then there was the home product, a class of women who, after a very short course of instruction, received a diploma from a school, the instructors in which were physicians of no standing in the community. If the paper of this evening could bring about some remedy for this evil alone a very great advance in the control of puerperal infection would be made.

Dr. Floyd M. Crandall said that there could hardly be any doubt as to the importance of the reporting of infectious diseases and perhaps of all diseases for the purpose of tabulation and study. The great obstacle would be found in the objections of the general practitioner. One trouble was carelessness and forgetfulness in the matter of notification. Again, in many families a considerable pressure was brought to bear upon the physician to prevent the proper notification. A considerable time for education and training would be necessary before such a system could be made to work smoothly, and hence, the sooner the proposed plan was inaugurated, the better. He thought too much could not be said by the profession of this city with regard to the value of the work done in the health department by Dr. Biggs.

Dr. Louis A. di Zerega asked Dr. Biggs if he thought it was possible to report every case of typhoid within twenty-four hours after first seeing the case. He would also like to know the attitude of the Board of Health with regard to gonorrhea, syphilis and leprosy.

Dr. Gouley thought that all of the cases to which Dr. di Zerega had made reference could be reported by simply omitting the names, which were of comparatively little importance to the sanitary authorities.

Dr. Biggs, in closing the discussion, said he desired to bring about a different attitude on the part of the profession and people toward the health department and its work. The feeling was, and had been, that as long as any disease was reported to the health department, this notification became public property, and the health department assumed sanitary surveillance. The health department did not assume such surveillance except in the case of those diseases which were generally regarded as contagious or very readily communicable, such as measles, scarlet fever, smallpox, chickenpox and typhus fever. The reporting of chickenpox was required not because that disease in itself was an important one, but because a large percentage of the localized outbreaks of smallpox had, in the experience of the health department, come from unrecognized and very mild cases of smallpox which had been regarded as chickenpox. For that reason the department required that every case of chickenpox occurring in the adult be seen by a diagnostician of the department. Although last year about 15,000 cases of pulmonary tuberculosis were reported to the health department, it was found still that many practitioners had a strong feeling against the reporting of such cases. However,

the same men who would decline to report a case of tuberculosis as such would send a specimen of the expectoration for examination by the department. This attitude evidently indicated the fear that the health department would make such notification public property, and would assume sanitary surveillance. The department had never done this except in tenement and lodging houses, and did not even then make inspections or take any action, if the physician reporting it was a private physician, and did not desire the health department to take any such action. With regard to pneumonia, influenza and the diarrheal diseases, he would say that the object of notification was not that the health department desired in any way to embarrass the physician but rather to assist in determining what unsanitary conditions had existed, and had been potent in the production of these diseases. He knew very well that from time to time there was ground for the feeling of antagonism between the private physicians and the health department, but it was impossible with a corps of three or four hundred inspectors furnished to the department by the civil service board to have everything working satisfactorily. These persons could not be removed from office by the department except for very good and definite cause. If improper conduct on the part of the inspectors were promptly reported to the sanitary authorities the matter could be easily corrected, but instead of this it was the rule for the profession generally to nurse their wrongs rather than forward the particulars of their complaint to the proper authorities. Within a little over a year 35 inspectors had been dropped because of their making false returns of their work. The same thing was true to a large extent with regard to the foreign element of the tenement house population. He had the feeling that if the list of diseases presented by him were very much increased the attitude of the people toward the health department might be changed because of a better knowledge of the true functions of that department. To the old list of diseases in which notification was compulsory had been added only glanders, epidemic cerebrospinal meningitis, puerperal septicemia and erysipelas. At the present time more than 80 per cent. of all the cases of pulmonary tuberculosis occurring in the Borough of Manhattan were reported. The notification of venereal diseases had received very careful consideration. He saw no objection to the reporting of such diseases without names, yet a pretty large experience had taught him that there was little to be gained. Physicians were too busy to attend to such work unless there was some spur, such as would arise from tracing these reports. Again, he had been a little at a loss to know what the sanitary authorities would do even if these cases were reported, and some person who had contracted a disease of this kind should come to the health department and ask why he had not been protected from this known source of infection. The question had been asked with regard to the notification of typhoid fever; he would answer that the law specified that notification should be made twenty-four hours after the recognition of the disease, for, of course, it could not be reported before it had been recognized. The reporting of cases did not involve any notoriety, for the records of the department were not open to the public except so far as concerned the contagious or very readily communicable class of diseases. Cases of leprosy had been reported to the department, and they had been at a loss to know what action to take. It was not desired to keep such persons on North Brother Island for the rest of their lives, as there were no recorded cases in which this disease had been spread here by contagion. Numerous attempts had been made

to secure legislation for the regulation of midwives; at the present time nothing was required to become a midwife further than a statement, signed by two physicians, that she was competent. He believed if puerperal septicemia were made a reportable disease, and the responsibility for the large number of such cases be fixed upon the midwives, it would be possible to obtain legislation for their control.

Probably no one had any conception of the prevalence of trachoma in the public schools before the crusade made last year by the health department. Since the first of the present year a "trachoma dispensary" had been established with a staff of 17 physicians. Two of these operated in the morning, and two in the afternoon, and an average of 25 operations for trachoma, under anesthesia, were done daily. In addition to this work, between three and four thousand other eye cases had been treated each week.

With regard to the work on diphtheria in the tenements, the speaker said that about 50 new cases of diphtheria a week were treated in the tenements by the Board of Health physicians. These cases were usually neglected and severe ones, yet the mortality among these cases in the past year had been a little over 7 per cent. This gave some idea of what antitoxin had done in the control of diphtheria.

AMERICAN PROCTOLOGIC SOCIETY.

Fifth Annual Meeting, held in St. Charles Hotel, New Orleans, May 5 and 6, 1903.

The President, SAMUEL T. EARLE, M. D., in the Chair.

"The Qualifications for Membership in the American Proctologic Society."—The President delivered a very able address on this subject. Among other things, he said:

"Now is the time that our foundation is being laid, and the life and success of the Association depend upon the wisdom and discretion with which it is laid. We should look well to how our ship of state is trimmed and manned for each year's voyage, and have our course well mapped out to avoid the possible rocks and quicksands. And just at this time and juncture it seems to me that our attention should be called to a matter of the gravest importance to the continued life and usefulness of our Association, if it is to be the oracle of thought, purpose and action in all that pertains to proctologic work. The profession, and especially general surgery, is looking askant upon us, and is already prophesying that no great good can be accomplished in such a restricted field, and where work to be done is so near the surface, and within reach of the simplest observer. It is certainly expected that if we are to be recognized as leaders in this line of work, we must use as our foundation the cardinal principles that underlie both general surgery and medicine; in other words, we must be well grounded in the principles of both. In the organization of any association, it is almost impossible to draw the lines very tight; but when fairly upon its feet, there is nothing more important to its perpetuity and usefulness than the character and ability of the members it gathers in, and upon whom the position to be taken by the association depends. We cannot scan too closely, or from too many standpoints, those whom we delegate to carry on this work, and on whom its future success depends. It is quality, not numbers, that we most need; neither the one whose usefulness in proctologic work is interfered with by his interest in other departments of medicine or surgery, nor the pseudo-proctologist, should apply for member-

ship in this Association. The principal object the members of this Association have had, in keeping it a separate and distinct organization from the American Medical Association, has been that we might control the character of its membership, not from any selfish or narrow motives, as is evidenced by the welcome we have always accorded to those who are not members, to attend our general meetings, but for the broad and worthy object of enrolling upon our list of members only men of ability, learning, and with the avowed purpose of bending all their energies to advancing their knowledge of rectal medicine and surgery; because it is only by such means and men that we can hope to maintain our position as leaders and directors in this special line of work. Candidates for admission to the American Proctologic Association should be specialists in that line of work, meaning thereby that they devote their energies chiefly to it. I do not mean to say that we may not often get valuable suggestions from those in other lines of work, just as general medicine and surgery do from kindred sciences. If men in the various specialties of medicine would only be sufficiently honest and unselfish as to confine themselves strictly to their special work, there would be no necessity for the suggestions I am now making. We would have no such applicants. Show me a gynecologist or general surgeon who would hesitate for one moment to take a case of rectal surgery. I do not mean to say that our work is so complicated that others than rectal surgeons cannot perform such operations. A general surgeon can perform iridectomy, but who would be so foolhardy as to go to a general surgeon for such an operation when a competent oculist is at hand? So it is in ours, and in all other specialties; the man who confines himself to one line of work must be far below mediocrity if he cannot perform the operations in his line better than the general surgeon, or those in other special lines of work. In order to be recognized by this organization, one should be something more than a mere itinerant vendor of a pile ointment, or a pile doctor whose only armamentarium consists of a hypodermic syringe and a bottle of carbolic acid. We need well-educated, well-trained, and well-equipped men to carry on this work. We have submitted to us operations that require the most perfect surgical technic and the greatest skill, the coolest head and deftest hand."

X-Ray Therapy in Ano-Rectal Diseases.—Dr. J. Rawson Pennington presented this paper. The author dwelt upon the importance and efficiency of this agent in the treatment of pruritus ani, where the cause is local. The Society asked Dr. Pennington to continue his searches in X-ray therapy in rectal diseases.

Tuberculous Ulceration of the Rectum and Anus.—Dr. L. H. Adler, of Philadelphia, presented a paper upon this subject, in which he stated that tuberculosis is now recognized as the cause of a number of conditions occurring about the anus and within the rectum, the pathology of which was formerly obscure. The disease may be a primary process, but in the majority of instances it is secondary to similar changes in other organs. It may involve any portion of the rectum, or the skin about the same; its most frequent site, in the author's experience, however, is at the muco-cutaneous junction. The affection is always due to the tubercle bacillus. Any plan of treatment, to be of benefit, must, in a large measure, be directed to the general constitutional condition; and for this purpose, pure air, forced feeding, and all the hygienic and medicinal measures should be adopted as are employed in general tuberculosis. The local treatment has for its main objects the destruction of the tubercle bacilli, and the establishment of a healthy reparative process. The Paquelin or the galvanocautery, chemical caustics—such as chlo-

ride of zinc, nitric acid and acid nitrate of mercury—the curette, and the X-ray, have been employed for these purposes, and with varying results.

Primary Tuberculosis of the Rectum with Report of Cases.—Dr. Leon Straus, of St. Louis, presented this very interesting paper.

Atony of the Rectum and Anal Sphincters; its Etiology, Pathology, Diagnosis and Treatment, was the title of a paper presented by Dr. William Bodenhamer, of New York, in which he said: "Atony of the rectum and colon is most commonly met with in delicate women of a lax muscular fiber, and in those whose sedentary occupations lead to a neglect of the necessary measures to insure the regularity of the functions of the organ. It is also frequently met with in delicate children. In the treatment of rectal atony, the first consideration is to enjoin a strict observance of regular habits respecting a daily evacuation of the rectum, and this may be aided and often attained by simple means, such as the injection of half a pint of cold water into the rectum at the regular time of going to stool; cold being tonic, stimulant, and astringent, and acts somewhat similarly to nux vomica, by exciting the sensibility and contractility of the organ; but it should be discontinued as soon as the object of its use has been attained. In the more obstinate cases, however, the chief remedies should be nux vomica, alone or combined with some other ingredients, together with the employment of rectal injections composed of powerful astringents and tonic substances, with the intention of inducing contraction, corrugation, and condensation of the relaxed and weak muscular fibers of the rectum, by which they become shorter and firmer, and thus aid in diminishing the morbid organ to its normal dimensions and tone."

Obstipation, its Causes, Effects, Diagnosis and Treatment.—This interesting paper was read by Dr. John L. Jelks, of Memphis, Tenn. He stated that obstipation is the term used by proctologists to denote mechanical obstruction of the bowel, and is preferred to the generic term of which obstipation is one variety. He classed the causative factors as follows: (1) Extravisceral, (2) perivisceral, (3) visceral, (4) intravisceral. One of the chief facts which the author wished to forcibly express is that other factors may and do cause obstipation or obstructive constipation, and a careful discrimination should be made before an operation is performed upon a supposed obstructing rectal valve.

Cautero-angiotribe.—Dr. B. Merrill Ricketts, of Cincinnati, called the attention of the Society to this instrument as an efficient agent in the treatment of hemorrhoids and first degree rectal prolapse. This subject, together with that of "Hemorrhoids," by Dr. George T. Cooke, of Indianapolis, elicited considerable discussion, and Dr. Ricketts was instructed to make further report on the use of the angiotribe in the treatment of hemorrhoids. The discussion disclosed the approval of various methods of treatment of hemorrhoids, but none of them ideal.

The Treatment of Anal and Rectal Diseases without General Anesthesia, was the title of a paper by Dr. William L. Dickinson, of Saginaw, Mich., in which he said: "The treatment of anal and rectal diseases has been so long associated with that of general anesthesia that when a patient presents himself, and we have made an examination, we unconsciously begin to solve the mental problem of how he will take the anesthetic, and the number of days he will be confined to the house after the operation. The time-honored treatment of anal fissure by dilation, under chloroform, was both effective and speedy; but we can accomplish the same results, in a little longer time, by the use of cocaine or eucaine. Superficial fistula, ischiorectal abscess, ex-

ternal hemorrhoids, and many cases of internal hemorrhoids, can be operated upon under filtration just as well as general anesthesia. We owe it to our patients, and also to ourselves, to keep patients from going to the irregular practitioner, for as regular, educated physicians, we ought to be able to cope with all diseases of the rectum, in an intelligent manner, and thus give entire satisfaction to our patients. Our students should be taught that the greater number of our patients seek our advice and aid for ailments that respond readily to office treatment that can be given without general anesthesia.

Molluscum Fibrosum of the Rectum in a Patient, the Subject of the Typical Skin Lesion—A Unique Case.—This paper was reported by Dr. A. Bennett Cooke, of Nashville. This was probably the most interesting paper of the meeting. He stated that the feature of the case which justifies the adjective "Unique" is not the skin disease nor the occurrence of the multiple fibroid tumor in the rectum, but rather the association of the two conditions in the same individual and the further fact that the mucous and cutaneous tumors are identical in structure. He described the patient as emaciated, sallow, nervous and despondent; at least a dozen calls to the stool in twenty-four hours; sphincters relaxed and peri-anal integument excoriated from the irritating discharges; anal canal patulous, in spite of numerous successive abrasions. The proctoscope revealed the rectum almost completely filled with polypoid tumors, many of them ulcerated and bathed in a mucopurulent, blood-stained secretion of exceedingly offensive odor. The growths began in the lowest rectal chamber, varying in size from a bird shot to an almond; the largest were uniformly pedunculated, those intermediate in size had sessile attachments, and the smallest appeared as mere elevations under the mucous membrane, well embedded. It was found that the lesions extended well into the sigmoid colon, smaller in size, and were attended by less inflammation of the mucosa. Beginning below, the tumors were removed by tortion with the forceps, and by biting them off with a curette against the sharp end of the proctoscope. The hemorrhoid was rather free, so that it was possible to remove only a small number at a sitting. The operation was repeated from time to time during a period of three weeks, when the bowel, as high as could be seen, was clear of all but the smallest tumors. Sixty of the growths were removed; no anesthetic was employed. Dr. Cooke appended a report from a pathologist, which demonstrated the identity of the skin and rectal lesions. The production was considered a valuable contribution to proctologic literature.

The Society elected the following officers for the ensuing year: President, Dr. William M. Beach, of Pittsburgh; Vice-President, Dr. Leon Strauss, of St. Louis; Secretary-Treasurer, Dr. A. Bennett Cooke, of Nashville. Executive Council: Dr. Samuel T. Earle, of Baltimore (retiring President), Chairman; Dr. George B. Evans, Dayton, O., and Dr. John L. Jelks, Memphis, Tenn.

The Society adjourned to meet in Atlantic City, in June, 1904, on the first and second days of the meeting of the American Medical Association.

BOOK REVIEWS.

TUBERCULOSIS. By NORMAN BRIDGE, A.M., M.D., Emeritus Professor of Medicine in Rush Medical College. W. B. Saunders & Company, Philadelphia, New York and London.

Dr. BRIDGE's book is recast from lectures delivered at Rush Medical College, Chicago, and is a worthy con-

tribution to our American observations on tuberculosis, besides being thoroughly representative of our practical methods of diagnosis and treatment of the disease.

One phase of the extremely practical way Dr. Bridge has of looking at details of treatment of tuberculosis can be appreciated very well from a quotation from his chapter on Sanatoria for Consumptives. "If every person," he says, "with pulmonary tuberculosis, could, from the very first, give up and not pretend to himself or to others that he is well, but settle down with patience and attention to the business of getting well, the proportion of recoveries would be greatly increased. The sanatorium life is conducive in a high degree to this good philosophy. It is attainable at home, but less easily. There the temptation to do all sorts of things, often begets an attempt to hide even the existence of tuberculosis, as though it were a disgrace like drunkenness or opium taking, to be spoken of only in an undertone and even forgotten by the patient." This places the modern theory of the treatment of tuberculosis in sanatoria in a better light and truer than any statement we have yet seen.

It is not so much the air or even the diet of the sanatorium as the regularity of life and the admission that all are taking care of themselves because of deadly disease that counts for health.

SURGICAL DISEASES OF THE KIDNEY AND URETER. Including Injuries, Malformations and Misplacements. By HENRY MORRIS, M.A., M.B., Lond., F.R.C.S., Fellow and Chairman of the Court of Examiners of the Royal College of Surgeons, etc. W. T. Keener & Co., Chicago.

THESE two volumes come very near to the ideal in the completeness with which they cover an entire province of surgery, and in the masterly manner in which the subject is handled. Twenty years ago, when the author published his "Manual on the Surgical Diseases of the Kidney," he was a pioneer in what was almost a new field, and there was great difficulty in obtaining information, owing to the scantiness of material published, but the two following decades have been marked by the utmost activity in this department of surgery, and it now requires a master hand to set in order the voluminous literature which has accumulated since the first nephrolithotomy was done in 1880. The development of the surgery of the ureter is of still more recent growth, since, prior to 1894 the number of papers on this subject might be counted on the fingers of one hand, while now they run up into the hundreds. The author has done a work of inestimable value in digesting this mass of information scattered through the literature of the world and presenting what it contains of value, illuminated by his own vast experience. With a work of such scope a detailed review is scarcely possible and a general indication of the plan of the book must suffice. Volume I. is devoted entirely to the kidney and contains 21 chapters considering the normal and pathological gross anatomy of the organ, its clinical examination, movable and floating kidney, injuries and tumors of the kidney, perinephritic extravasations and inflammations, suppurative and non-suppurative pyelophlebitis, renal and circumrenal fistula, and tuberculosis and syphilis of the kidney.

The first portion of Volume II is given up to renal calculi and minute descriptions of the technic of the various operations on the organ. In Part Two the ureter is discussed and its anatomy, injuries, inflammations, strictures, tumors, fistulae, calculi, etc., described in 20 additional chapters, together with the technic of its catheterization and operation upon it. The former is a procedure the author strongly condemns as a routine diagnostic measure, as well as for the purpose of

treating hydro- and pyonephrosis and ureteral stenosis, owing to the unreliableness of the information it affords, the risks to which it exposes the patient, and the difficulties of execution attending it. The use of Harris' and the other newer vesical segregators does not seem to be mentioned, nor is the value of cryoscopy in determining the functional efficiency of the "other kidney" indicated. We have also been unable to discover any mention of decortication of the kidney for chronic nephritis.

The illustrations are nearly all original, and for the most part portray pathological specimens.

THE SURGICAL DISEASES OF THE GENITO-URINARY ORGANS. By E. L. KEYES, A.M., M.D., LL.D., Consulting Surgeon to the Bellevue and Skin and Cancer Hospitals, and E. L. KEYES, Jr., A.B., M.D., Ph.D., Lecturer on Genito-Urinary Surgery, New York Polyclinic Medical School and Hospital. A Revision of Van Buren and Keyes' Text-book. Appleton & Co., New York and London.

THIS, the second complete revision of what was the first book in any language in which genito-urinary diseases and syphilis were grouped together brings the volume once more to the pre-eminent position it had so long occupied. In accordance with modern views, syphilis, which is a genital disease only in its commonest method of invasion, has been entirely eliminated, while the anatomical method of classification formerly adopted has been abandoned in favor of the more logical clinical system of to-day. Venereal diseases, as such, having been excluded, sexual and genital maladies have been relegated to second place and somewhat subordinated to the consideration of diseases of the urinary tract. Gonorrhea, however, is considered at great length and its complications in joints, the eye, etc., are treated with unusual completeness. We accordingly find that the first 650 pages are devoted to diseases of the urinary organs, including gonorrhea, while the diseases of the genital organs per se occupy the remainder of the book.

In their treatment of specific urethritis the authors rank themselves with the advocates of the irrigation method and employ the modified Janet technic suggested by Chetwood. Ureteral catheterization they consider still sub judice, but the descriptions of the technic of cystoscopy and the interpretations of its results are excellent and accompanied by a good plate portraying typical cystoscopic pictures. The Bottini operation is admitted to be a step in the right direction in the treatment of prostatic hypertrophy, but is open to the objection of being done in the dark and of invading a septic cavity without providing drainage. The preference is accordingly given to Chetwood's perineal galvano-prostatotomy, which is practically a Bottini operation done through a perineal section wound. This is considered the simplest and safest operation yet devised for the cure of prostatic hypertrophy, though for the larger glands it may have to be supplemented by suprapubic or perineal prostatectomy.

The work throughout bears the stamp of wide experience and thoughtful consideration of the literature and affords a thoroughly reliable and instructive guide for the practitioner and student. Even though an occasional statement, such as the remark that in performing suprapubic aspiration of the bladder "it is not necessary that the surgeon's hands be surgically clean," and the advocacy of the subcutaneous ligature of varicocele does not altogether harmonize with the views of the general surgeon, the book no doubt remains the most valuable and authoritative work on the subject in the language and will enjoy the distinction, rare in medical literature, of having guided the thought and practice of three generations of medical men.

BOOKS RECEIVED.

The MEDICAL NEWS acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the MEDICAL NEWS will shortly appear.

FELIX. A Novel. By R. S. Hichens. 8vo, 431 pages. F. A. Stokes Co., New York.

AUTOBIOGRAPHY OF A THIEF. By H. Hapgood. Octavo. Fox, Duffield & Co., New York.

PROTOZOA AND DISEASE. By Dr. J. J. Clarke. 8vo, 177 pages. Illustrated. Wm. Wood & Co., New York.

GYNÆCOLOGY. By Dr. W. R. Pryor. 8vo, 380 pages. Illustrated. D. Appleton & Co., New York and London.

A TREATISE ON THE CARE OF THE EXPECTANT MOTHER. By Dr. L. Howe. 12mo, 63 pages. F. A. Davis Co., Philadelphia.

TUMORS, INNOCENT AND MALIGNANT. By Dr. J. Bland Sutton. 8vo, 556 pages. Illustrated. W. T. Keener & Co., Chicago.

SURGICAL DISEASES OF THE ABDOMEN. By Dr. Richard Douglas. 283 pages. Illustrated. P. Blakiston's Son & Co., Philadelphia.

POST-MORTEM PATHOLOGY. By Dr. W. H. Cattell. 8vo, 372 pages. Illustrated. J. B. Lippincott Co., Philadelphia and London.

URIC ACID IN THE CAUSATION OF DISEASE. By Dr. A. Haig. Sixth edition. 8vo, 947 pages. P. Blakiston's Son & Co., Philadelphia.

DISEASES AND INJURIES OF THE EYE. By Dr. Arnold Lawson. Sixth edition. 8vo, 587 pages. Illustrated. Smith, Elder & Co., London.

INTERNATIONAL CLINICS. Volume I. Thirteenth Series. 1903. Octavo, 306 pages. Illustrated. J. B. Lippincott Co., Philadelphia.

ORGANIC NERVOUS DISEASES. By Dr. M. Allen Starr. Octavo. 8vo, 751 pages. Illustrated. Lea Brothers & Co., New York and Philadelphia.

THE PRAXIS OF URINARY ANALYSIS. By Dr. Lassar Cohn. Translated by Dr. H. W. F. Lorenz. 12mo, 58 pages. John Wylie & Sons, New York.

REFERENCE HANDBOOK OF THE MEDICAL SCIENCES. Edited by Dr. A. H. Buck. Volume I. Quarto. 1,004 pages. Illustrated. Wm. Wood & Co., New York.

SYMPHONAGE AND HYDRAULIC PRESSURE IN THE LARGE INTESTINE. By Dr. R. W. Leftwich. 12mo, 80 pages. Illustrated. William Wood & Co., New York.

A MANUAL OF SURGICAL TREATMENT. By Drs. W. W. Cheyne and F. F. Burghard. Vol. VII. 8vo, 559 pages. Illustrated. Lea Brothers & Co., New York and Philadelphia.

MODERN MATERIA MEDICA AND THERAPEUTICS. By Dr. A. A. Stevens. Third edition. 8vo, 663 pages. W. B. Saunders & Company, New York, Philadelphia and London.

A SURGICAL TREATMENT OF GASTRIC AND DUODENAL ULCERS. By Dr. B. G. A. Moynihan. 8vo, 82 pages. Illustrated. W. B. Saunders & Company, New York, Philadelphia and London.

A PRACTICAL APPLICATION OF THE RÖNTGEN RAYS IN THERAPEUTICS AND DIAGNOSIS. By Drs. W. A. Pusey and E. W. Caldwell. 8vo, 591 pages. Illustrated. W. B. Saunders & Company, New York, Philadelphia and London.

PHYSIOLOGICAL ASPECTS OF THE LIQUOR PROBLEM. Investigations made and under the direction of W. O. Atwater, J. S. Billings, H. P. Bowditch, R. H. Chittenden. Two volumes. Octavo. Houghton, Mifflin & Co., Boston and New York.